Ethnofederalism and ethnic voting*

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September 10, 2024

Abstract

We study how the design of subnational political borders shapes the ethnicization of national politics. We introduce novel measures that approximate the extent to which political boundaries follow a country's ethnic geography. We then analyze the effects of the 2010 constitutional reform in Kenya, which divided the country's eight provinces into 47 counties and devolved power to these new counties. Using difference-in-difference designs, we find that ethnofederal reforms, reforms that increase the alignment between political divisions and ethnic geography, reduce ethnic voting in national elections. A key channel is that ethnofederalism "tranquilizes" locally powerful groups that control the provision of local public goods. Finally, we evaluate the counterfactual effects of alternative boundary proposals on ethnic voting in Kenya.

Keywords: Ethnofederalism, decentralization, territorial structure, ethnic divisions, ethnic voting, ethnic politics, Kenya.

JEL classification: D02, D72, H77, J15, O55

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*We are thankful for helpful comments by Samuel Bazzi, Johannes Buggle, Filipe Campante, Siddharth George, Clark Gibson, Ruben Durante, Sarah Langlotz, James D. Long, Joris Mueller, Philip G. Roeder, Tuan-Hwee Sng, Mathias Thoenig, and Pedro Vicente; conference participants at the BSE, CSAE, DENS, EEA, EPCS, GDE, Beyond Basic Questions Workshop, the Silvaplana Workshop in Political Economy, and the ZEW-ifo Young Scholar Political Economy Workshop; and seminar participants at Brown University, GIGA Hamburg, Monash University, NOVA Business School, NUS Singapore, Université libre de Bruxelles, University of Bergen, University of California San Diego, University of Fribourg, University of Innsbruck, University of St.Gallen, and WU Vienna. Paul Schaudt acknowledges funding from the Swiss National Science Foundation Ambizione project PZ00P1208916.

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1. Introduction

Ethnic identity is an important organizing principle in the politics of many countries. However, identity politics often boils down to "us versus them," which hinders nation-building. It frequently prevents the formation of parties with broad support, reinforces clientelism, and encourages voting along ethnic lines. Ethnic competition for state resources often leads to poor governance and political instability. The consequences can be dire, as seen when such competition pushed Kenya to the brink of civil war in 2007/8. Although ethnic identities are known to be malleable, it is not clear how policymakers can leverage this fact to reduce ethnic divisions at the ballot box.

The key question we address in this paper is if formal political institutions can alter the salience of ethnicity in national politics. Specifically, we examine whether and how reforming subnational political borders in such a way that federal divisions align more closely with a country's ethnic geography, in combination with devolution of power, can reduce ethnic voting in national elections. We make three contributions. First, we introduce a new framework for measuring and classifying subnational border designs and border reforms at the micro level. Second, we apply this framework to analyze the effect of Kenya's 2010 constitutional reform on ethnic voting. Third, we use our estimates to assess different proposed border reforms in Kenya and to compare them to the optimal border design. Our findings illustrate how the design of political institutions can help to manage ethnic cleavages and reduce incentives to vote along ethnic lines in national elections by shifting the trade-off between patronage and performance toward the latter.

Subnational border designs differ in the extent to which they unite or divide those who share a common ethnic (or other) identity. Moreover, the importance of subnational political units depends on the power and resources devolved to these units. Ethnofederal designs combine relatively homogeneous units with powerful regional governments in an effort to tie the hands of the central government (Lijphart, 1977; Horowitz, 1985; Weingast, 1995; Rohner and Zhuravskaya, 2023). Horowitz (1985), for example, argues that ethnofederal designs have a "tranquilizing effect" on ethnic divisions in that they reduce the salience of ethnicity in national politics by shifting contentious issues, such as education or language policy, to homogeneous units. Economic theory supports such designs, as federations can be larger, more stable, and more accountable if political borders are drawn in a way that ensures limited preference heterogeneity within regions (e.g., Alesina and Spolaore, 1997, 2005; Spolaore, 2010). Moreover, the presence of economies of scale and information externalities suggest that there should be few (rather than many) homogeneous units (e.g., Tiebout, 1956; Oates, 1972; Boffa et al., 2016). Alternative border designs include crosscutting designs, which deliberately mix ethnic groups within political units in the hope of creating alternative potential cleavages (Coser, 1956; Dahl, 1956; Lipset, 1960; Rokkan and Lipset, 1967); unitary designs with few or

no subnational units; and what we call "provincialist designs" with many small units, typically even multiple units with similar ethnic compositions. So far, we lack credible empirical evidence on the effects of ethnofederalism, as measures of border alignment are typically thought of as country-level aggregates (e.g., Taylor and Rae, 1969; Anderson and Lochery, 2008; Rohner and Zhuravskaya, 2023).

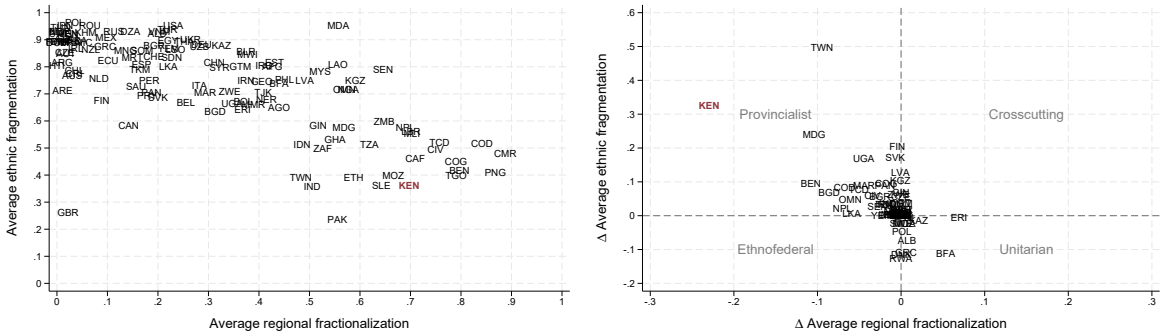
We address this challenge by proposing two measures to characterize how individuals are exposed to a given border design or a reform thereof, depending on their ethnic identity and place of residence. The first is the well-established fractionalization index, which we apply to the subnational level to measure ethnic heterogeneity within political units. The index corresponds to the probability that two randomly selected individuals from a given unit identify with different ethnic groups. The second is an index of ethnic fragmentation measuring the fractionalization of ethnic groups across political units. It corresponds to the probability that two randomly selected individuals from the same ethnic group live in different political units. This index is novel but takes a perspective on how groups are divided by political borders that is not (see, e.g., Michalopoulos and Papaioannou, 2016, on national borders).

In our empirical analysis, we will focus on Kenya and use these two indices to exploit within-country variation for causal identification. For now, we instead compute these indices based on data available for many countries and average them at the country level to get a bird's-eye view on the prevalent border designs across the globe. Panel A of Figure I shows that many countries feature low average regional fractionalization and high average ethnic fragmentation, suggesting many ethnically homogeneous units as in provincialist designs. Other countries, including pre-reform Kenya, feature diverse units that unite groups within their boundaries. However, comparing these averages is challenging, because countries differ in both, their border design and their underlying ethnic geography. In contrast, reform-induced changes in these averages for a given ethnic geography are easier to interpret. Panel B shows that the border designs of many countries, including Kenya, have become more provincialist over time. The reason is that these countries created new homogenous units that split ethnic groups.

Kenya and its 2010 constitutional reform offer an ideal testing ground to evaluate (ethnofederal) border reforms for at least four reasons. First, Kenya is a diverse country with a prominent history of ethnic politics and ethnic voting in presidential elections. Second, by replacing eight provinces with 47 counties as primary political units, the 2010 constitutional reform led to a substantial change in Kenya's border design. Panel B of Figure I confirms that no other country globally experienced a larger decrease in average regional fractionalization and only one a larger increase in average ethnic fragmentation in the period from 1995–2015. Importantly, there is substantial heterogeneity in the changes of regional fractionalization across Kenya's locations and the changes in ethnic fragmentation across its ethnic groups. Third, the constitutional reform did not only

FIGURE I
Cross-country comparisons of border designs and border reforms

(A) Border designs (1995) (B) Border reforms (1995–2015)



Notes: Panel A plots the population-weighted average regional fractionalization and the population-weighted average ethnic fragmentation across countries. Panel B plots the changes in those averages from 1995 to 2015. The quadrants in panel B allow the classification of the changes and the underlying border reforms as provincialist, crosscutting, ethnofederal, or unitarian. The population data is from the Global Human Settlement Layer (Florczyk et al., 2019), political boundaries in 1995 and 2015 are from Bluhm et al. (2020), and the underlying ethnic geography is proxied by rasterized data from Ethnologue following the approach by Eberle et al. (2020). Further details are provided in Online Appendix A.

change the border design, but also devolved power to the new primary political units, as suggested by proponents of ethnofederalism. It thereby transformed Kenya's winner-take-all system into a system with explicit revenue sharing between counties and the federal level. Hence, the reform is best seen as a bundle of treatments. While political devolution affected all locations equally, the border reforms affected individuals living in different locations and identifying with different ethnic groups differently.[1]

Lastly, while the timing of the 2010 constitutional reform was no coincidence, the exact change in the border design was hard to foresee. Kenya has a history of constitutional proposals aimed at redesigning and strengthening (ethnic) regions. Previous proposals include the so-called Bomas and Wako draft constitutions proposed in 2005. However, all previous proposals were either blocked by power-hungry incumbent presidents or rejected at the ballot box. The aftermath of the 2007/2008 election violence presented an opportunity for reform, aided by significant pressure exerted by external actors. There was, however, widespread disagreement about all aspects of the reform, including the administrative tiers and number of units in each tier, making it unlikely that voters could anticipate the exact border reform prior to 2010.

In our empirical analysis, we exploit the quasi-experimental variation in how different individuals experienced the border reform, depending on their ethnic identify and place of residence, to estimate the effect of different border designs on ethnic voting. We use

[1]We discuss other features of the 2010 constitutional reform in Section 3 and show that our results are not driven by those features in Section 5.3.

Afrobarometer survey data to measure ethnic voting.[2] Our primary outcome is a plurality indicator of ethnic voting that is equal to one if a respondent would have voted for the same party (or coalition) as most co-ethnic respondents. A key advantage of this measure is that it does not require an ad hoc definition of ethnic parties (or coalitions), but rather defines them from the data. This is important in the Kenyan context in which parties (and coalitions) are fluid and where there are many more ethnic groups than parties or presidential candidates.

We use a generalized difference-in-differences strategy that relies on two sources of variation: reform-induced changes in regional fractionalization for each location and reform-induced changes in ethnic fragmentation for each group. Both are computed using population data from the 1989 Kenya Population and Housing Census to hold the population distribution constant and isolate the effects of changing borders. Our specification relates the voting intentions of the respondents in the repeated cross-section Afrobarometer survey data to these two sources of regional and group-level variation. We always include county-by-ethnicity and time fixed effects to account for important aspects of the underlying ethnic geography and the reform itself, such as the general impact of devolution or differences in public goods and services and the effectiveness of their delivery. We support the validity of this design by, among other things, providing evidence that ethnic voting before the reform did not respond to subsequent treatment intensity and that our treatments do not affect voting intentions or the willingness to reveal party preferences.

Our main results show that ethnic voting is increasing in regional fractionalization as well as ethnic fragmentation. The event study estimates add that the former effects materialize quickly after the first election under the new constitution in 2013 and remain stable thereafter, while the latter effects take a few years to build up. These results strongly support the notion that ethnofederal reforms, which reduce regional heterogeneity and unite members of the same group to the extent possible, are most effective at reducing ethnic voting. However, this is not what happened in Kenya. Our evaluation of the 2010 constitutional reform shows that only a few groups experienced a net decrease in ethnic voting, because the beneficial reduction in regional fractionalization was more than offset by the harmful increase in ethnic fragmentation for most groups. In fact, our estimates suggest that the border reform increased ethnic voting by about 8 percentage points in aggregate.

As the 2010 constitutional reform was a bundle treatment that changed several features of the political system. We interpret our estimates as the differential effect of changing the border design while holding the extent of devolution constant. This interpretation requires that other heterogeneous impacts of devolution are not correlated

[2]Afrobarometer surveys ask about voting intentions and are conducted in off-election years. We use a representative exit poll to illustrate that voting intentions reflect actual voting behavior.

with our two treatment variables. To address potential confounders, we show that controlling for differences in the size of political regions or the proximity to regional capitals has little impact on our results. We also rule out that other boundary changes, such as the redrawing of parliamentary constituencies, drive our estimates. Further tests show that our results are robust to, e.g., nonlinear estimation methods, alternative definitions of ethnic voting, or different clustering of standard errors.

To better understand why ethnofederalism may "tranquilize" ethnic division and lower incentives to vote along ethnic lines in national elections, we present a simple model of ethnic voting. The model's setup mirrors key features of the Kenyan setting in which the central government generates all revenues and distributes a share to local governments, while both the central and local governments may have a co-ethnic bias in the provision of public goods. Intuitively, voters face a trade-off between voting for higher quality presidential candidates, which results in higher regional transfers, and receiving more centrally provided public goods from a co-ethnic president. Devolution shifts the balance toward the former for ethnic groups living in a county with a local government controlled by co-ethnics. Moreover, this effect is stronger when co-ethnics are united in a single county, e.g., due to economies of scale or improved accountability (as in Boffa et al., 2016). We thus expect that the effects of regional fractionalization and ethnic fragmentation are amplified for ethnic groups that control the county government. This is indeed what we find.[3]

Finally, we consider alternatives to Kenya's 2010 border reform. We use our estimates to simulate the counterfactual effects of earlier constitutional proposals—the Bomas and Wako draft constitutions—and the optimal political map, i.e., the map that would minimize ethnic voting, subject to realistic constraints met by the actual reform. The optimal map has 17 instead of 47 subnational units, similar to the 14 regions proposed in the Bomas draft, which came out of a long and inclusive constitutional review process but was never put to a referendum. Implied ethnic voting would be 6.2 percentage points lower than in the pre-reform provinces and 14.2 percentage points lower than in the post-reform counties. The Bomas draft would have reduced ethnic voting by about 1.3 percentage points and the Wako draft would have increased ethnic voting by 9.5 percentage points on average (both relative to the pre-reform provinces). These results show that boundary reforms can potentially reduce the salience of ethnicity in national politics. They underscore that the 2010 reform was not properly ethnofederal but rather provincialist by aggressively fragmenting ethnic groups into too many units and suggest

[3]We also look into whether ethnofederal reforms indeed strengthen ethnic identities (as some scholars fear) or whether they even strengthen the national identity. Using Afrobarometer survey data, we find no evidence that lower regional fractionalization or ethnic fragmentation impacts whether respondents primarily identify with their ethnic group or the nation. However, given how the survey question is asked, we cannot rule out that these changes increase (or decrease) both group identification and national identification—similar as the Nigerian youth service program studied by Okunogbe (2024).

that political elites supporting the different reform proposals were at least partially aware of their electoral implications.

Our findings contribute to several strands of the literature. First and foremost, we show that the design of political institutions matters for nation-building and can immediately mitigate the importance of ethnicity in national elections. This distinguishes ethnofederal reforms from large-scale resettlement programs (Bazzi and Gudgeon, 2021), education programs (Miguel, 2004; Clots-Figueras and Masella, 2013; Cantoni et al., 2017; Bandiera et al., 2019), or a mix of the two (Carlitz et al., 2022), which typically take a long time to affect the salience of ethnicity more generally. Shared experiences (Depetris-Chauvin et al., 2020; Cáceres-Delpiano et al., 2021) and a common narrative (Esposito et al., 2023) can also contribute to nation-building in the short run but are—at best—only partially in the control of policymakers.[4]

Second, we relate to the literature on political borders and their effects in two ways. We directly contribute to the long-standing debate on the benefits of ethnofederal and crosscutting designs (e.g., Lipset, 1960; Lijphart, 1977; Horowitz, 1985; Roeder, 1991) by providing new measures that characterize these designs at the subnational level as well as quasi-experimental evidence on the benefits of ethnofederal designs.[5] Moreover, we indirectly contribute to the literature on artificial national borders in Africa (Alesina et al., 2011; Michalopoulos and Papaioannou, 2016) by showing that the design of subnational borders plays an important role in managing the ethnic diversity African countries inherited from the colonial period.

Third, we contribute to research on ethnic politics in general and ethnic voting in Kenya in particular. We build on a sizable body of work documenting the existence of ethnic favoritism in the distribution of public goods (e.g., Franck and Rainer, 2012; Burgess et al., 2015; Kramon and Posner, 2016; De Luca et al., 2018) and on how ethnic voting hampers performance (e.g., Padró i Miquel, 2007; Francois et al., 2014; Pande, 2020). By showing that changes in political institutions and political borders can lower the incentive to vote along ethnic lines in national elections, we provide evidence in favor of a practical policy tool that could increase local performance and accountability. Thereby, we contribute to the literature on the role of ethnicity in Kenyan politics and society (e.g., Gibson and Long, 2009; Ferree et al., 2014; Burgess et al., 2015; Kramon and Posner, 2016; Kramon et al., 2022; Marx et al., 2021).

The remainder is structured as follows. Section 2 discusses our conceptual framework and how different administrative designs map onto our two heterogeneity measures. Section 3 summarizes Kenya's institutional background and the important aspects of the reform. Section 4 presents the data, describes our empirical strategy, and discusses

[4]See Rohner and Zhuravskaya (2023) for an overview of the recent literature on nation-building.

[5]See Dunning and Harrison (2010) for causal estimates on the effects of another type of crosscutting cleavages, namely cleavages between ethnicity and cousinage in Mali.

identification issues. Section 5 presents the main results, alternative explanation, and sensitivity analysis. Section 6 discusses local control as the main mechanism. Section 7 presents counterfactual border-designs that minimize ethnic voting, and Section 8 concludes.

2. Measuring border designs

In this section, we first discuss different prototypical border designs, including ethnofederal ones, and introduce two indices describing key characteristics of these border designs. We then show that these indices can capture how differently different individuals experience the same border reform, depending on their place of residence and their ethnic identity. Finally, we discuss how these indices can be used in micro-level analyses.

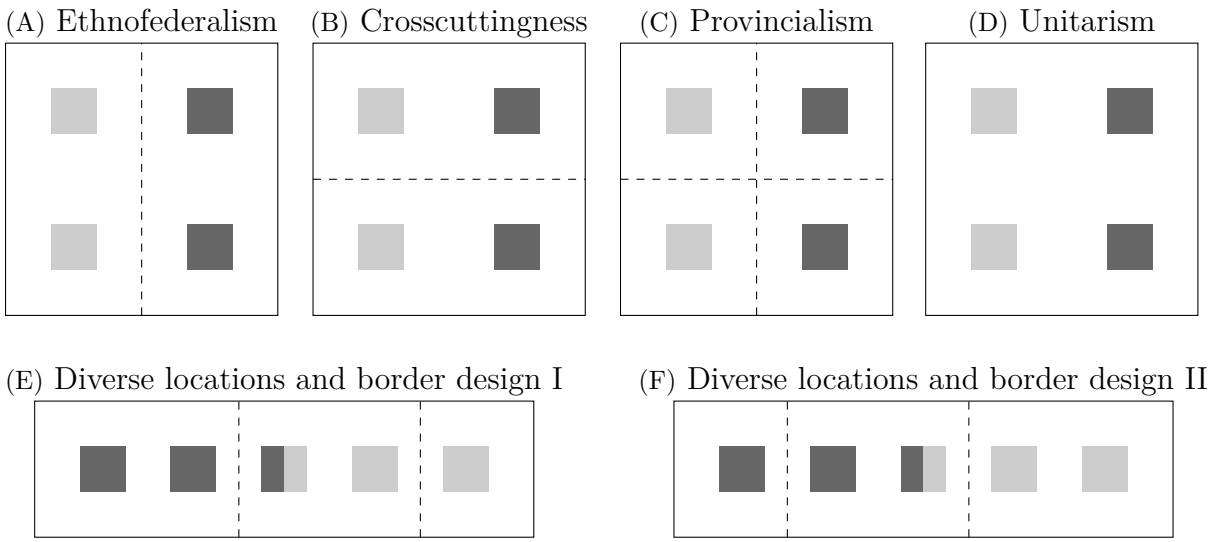
2.1. Prototypical border designs and their properties

Panels A–D of Figure II presents four different prototypical border designs for the same stylized country with four locations and two spatially segregated ethnic groups. Ethnofederal border designs are characterized by political borders that follow the boundaries of ethnic homelands. These borders guarantee that most individuals living in the same federal entity (state, for simplicity) identify with the same ethnic group and that most members of the same ethnic group live in the same state. Panel A shows an extreme case of an ethnofederal border design in which the political borders ensure that individuals belong to the same political region if and only if they identify with the same ethnic group (which is only possible due to the ethnic homogeneity of each location in our stylized country). In contrast, the political borders in panel B are crosscutting; they cut through ethnic homelands and create ethnically heterogeneous regions.[6] The next two panels show the two extreme configurations with respect to the number of political regions: Provincialism with many small regions in panel C, and unitarism without meaningful political units below the national level in panel D.

These four prototypical border configurations differ in two key characteristics. The first is the ethnic diversity within political regions. We quantify this diversity by an index of regional fractionalization that measures the within-region fractionalization across

[6]Panels A and B of Figure II illustrate the role of political borders for different measures of ethnic segregation. Measures of *spatial* segregation, e.g., the index introduced by Hodler et al. (2021), are computed based on spatial distances between individuals. Hence, they are independent of political borders. In contrast, measures of *a-spatial* or political segregation, e.g., those used by Alesina and Zhuravskaya (2011), are computed based on population shares in different political units. Therefore, political segregation is high when ethnofederal borders ensure very different distributions of ethnic groups across regions but low (zero) when crosscutting borders ensure similar (identical) distributions of ethnic groups across regions.

FIGURE II
Illustration of various border designs



Notes: The squares represent equally sized locations, and the different shades of gray represent different ethnic groups. Hence, all locations are ehtnically homoegnous except the central location in panels B.1 and B.2, which are ethnically diverse. The dashed lines represent political borders.

ethnic groups and, thereby, the ethnic diversity of political regions:

$$RF_r = 1 - \sum_{e=1}^{n} (s_e^r)^2, \tag{1}$$

where r is a political region, e an ethnic group, n the number of ethnic groups, and s_e^r the population share of group e in region r.[7] Regional fractionalization RF_r is low in all political regions r in the ethnofederal and provincialist border designs of panels A and C, but high in the crosscutting and unitarian border designs of panels B and D, which assign locations with very different ethnic compositions to the same political region(s).

The second key characteristic is the extent to which members of the same ethnic group live in different political regions. We propose to capture this extent by a novel index of ethnic fragmentation that measures the within-group fractionalization across political regions:

$$EF_e = 1 - \sum_{r=1}^{m} (s_r^e)^2, \tag{2}$$

where m is the number of political regions and s_r^e the population share of residents in political region r among members of ethnic group e. Ethnic fragmentation EF_e must be zero for all ethnic groups e in case of unitarism. Moreover, it is low in ethnofederal border designs. In contrast, it is high in crosscutting and provincialist border designs, which assign locations with similar ethnic compositions to different political regions.

[7] RF_r is the standard index of ethno-linguistic fractionalization computed at the regional level.

2.2. Individual exposure to border designs and reforms thereof

Unlike the stylized country shown in panels A–D, most real-world countries are not perfectly ethnically segregated. Instead they feature ethnically diverse locations. Therefore, it is not typically possible to find border designs that ensure zero regional fractionalization RF_r in all political regions r or zero ethnic fragmentation EF_e for all ethnic groups (such as the ethnofederal border design in panel A). More generally, these measures will typically vary across regions and groups. Panels E and F of Figure II presents another stylized country—one with an ethnically diverse location in the center—to illustrate this variation. Border design I in panel E implies $RF_r = 0$ in the Western and the Eastern region but $RF_r = 0.375$ in the central region (which contains the ethnically diverse location). Ethnic fragmentation is $EF_e = 0.32$ for the dark gray group and $EF_e = 0.48$ for the light gray group.

This variation implies that different individuals are exposed to the same border design differently depending on their place of residence and their ethnic identity. The same applies to border reforms. Suppose there is a border reform in the country depicted in Panel E that shifts both political borders westwards, leading to border design II shown in panel F. The individuals living in the central-western location (i.e., the second location from the left) experience an increase in regional fractionalization, as their location was part of an ethnically homogeneous political region prior to the reform, but part of an ethnically diverse region after the reform. In contrast, the individuals living in the central-eastern location (i.e., the second location from the right) experience a drop in regional fractionalization. Moreover, the dark gray group experiences an increase in ethnic fragmentation while the light gray group experiences a decrease therein. Hence, individuals living in the central-western location and identifying with the dark gray group are exposed to a crosscutting reform, while individuals living in the central-eastern location and identifying with the light gray group are exposed to an ethnofederal reform.

There are multiple ways in which these two measures of border designs can be used in applied research. First, one can use these measures in micro-level analyses to study the effects of experienced border designs and border reforms. This is what we do in this paper. For this purpose, we exploit the fact that the changes in regional fractionalization ΔRF_r and the changes in ethnic fragmentation ΔEF_e typically differ across individuals depending on their place of residence and their ethnic identity. We explain in Section 4 how we compute these changes and how we exploit them in our empirical analysis.

Alternatively, one can average regional fractionalization and ethnic fragmentation across all individuals of, say, a given country.[8] These averages or intertemporal changes

[8]These country-level averages of our measures are related to existing measures of crosscuttingness. Taylor and Rae (1969, p. 537) 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]." They introduce a country-level measure of crosscuttingness and show

thereof can be used for cross-country comparisons as in Figure I above. The changes in average regional fractionalization and average ethnic fragmentation can also be used to understand whether border reforms tend to be ethnofederal, crosscutting, provincialist, or unitarian.

3. Institutional background

Ethnic politics in pre-reform Kenya: Kenya is exceptionally diverse. The probability that two randomly drawn individuals from the country's population identify with different groups is about 88%. The five largest groups make up about two-thirds of the population and are spatially segregated (outside of Nairobi).[9] Four of these groups—the Kikuyu, Luo, Kalenjin, and Kamba—explicitly compete for power at the national level by fielding presidential (or later vice-presidential) candidates in most elections.

Kenya's ethnic divisions influence electoral politics in several ways. First, parties are fluid, institutionally weak, and often exclusively designed to bring specific politicians to power (Mueller, 2020). These parties often lack physical offices or official programs and are usually dormant between elections (Oloo, 2020). Members of the larger groups typically vote for their ethnic kin (Gibson and Long, 2009; Long and Gibson, 2015).[10] However, no ethnic group is large enough to secure victory alone. Therefore, parties must form multi-ethnic coalitions to win presidential elections, with one or two larger groups typically allying with smaller groups lacking co-ethnic candidates. Second, at nearly all levels of government, resources are frequently distributed along ethnic lines. This culture of ethnic competition has become encapsulated in the phrase "it's our turn to eat," reflecting the expectations of supporters when their candidates assume power (Wrong, 2009). The central government and local politicians allocate public goods to and provide patronage in areas where specific ethnic groups reside, aiming to increase voter turnout among their ethnic kin while co-opting other groups (Burgess et al., 2015; Horowitz, 2019; Hassan, 2020). Third, in pre-reform Kenya, power was heavily concentrated in the presidency, and the administrative structure was highly centralized, giving elections a "winner-take-all" character (Mueller, 2020). Until 2010, Kenya had a centralized administrative system, where the first two layers—provinces and districts—were politically relevant. Commissioners at both levels were handpicked by the president, with provincial commissioners overseeing and directing the activities of the district-level

that it decreases in aggregate measures of ethnic and regional fractionalization. See Selway (2011) and Desmet et al. (2017) for alternative aggregate measures of crosscuttingness.

[9] In 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 three percentage points.

[10] For instance, exit polls conducted during the 2007 elections show that 94.2% of Kikuyu and 97.8% of Luo voted for their coethnic candidate (Gibson and Long, 2009).

administration (Oyugi and Ochieng, 2020).[11] 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).

A window of opportunity for decentralization: Overcentralization and an uneven distribution of public resources frequently led to violence around elections after the transition to multi-party democracy in 1992.[12] The most significant recent outbreak of ethnically motivated violence occurred after the 2007 presidential election. It cost the lives of more than 1,000 people while internally displacing hundreds of thousands. Most violence was concentrated in the Rift Valley province, where Kalenjins and Luos clashed with Kikuyus, and in ethnically mixed Nairobi (Anderson and Lochery, 2008). As the crisis pushed Kenya to the brink of civil war, several external actors exerted significant pressure for constitutional change to prevent further violence. The African Union brokered a power-sharing deal among the two main contenders of the 2007 election—Mwai Kibaki (a Kikuyu) and Raila Odinga (a Luo)—and committed Kenya's elites to start a process of constitutional reform.

The 2007–2008 crisis reignited a longstanding debate on devolution. Kenya originally became independent in 1962 with a federal constitution—known as *majimbo*—in which substantial resources were to be distributed by the provinces through elected regional assemblies (Maxon, 2016; Hassan, 2020). *Majimbo* means regions in Swahili but has become more generally associated with federalism and the protection of smaller communities. The *majimbo* state never became operational. The country's first president, Jomo Kenyatta (a Kikuyu), immediately dismantled it (Maxon, 2016).

Serious efforts at reforming Kenya's constitution started as a reaction to protests in the late 1990s. *Majimboism* resurfaced as a rallying cry for the opposition, who sought to limit executive power, and for the center, who labeled it as a divisive ideology (Maxon, 2016). In 1997, a constitutional review commission was formally established and tasked to lead an inclusive reform process. Even so, then-President Daniel Arap Moi (a Kalejin) dissolved parliament in 2002 before the proposed changes could be considered. The process restarted with a new draft constitution in 2005, which resulted from a national constitutional conference held at Bomas. The final *Bomas draft* included 14 regions with 70 districts (plus the four boroughs of Nairobi). The key provisions were strong devolution, a bicameral legislature with a senate, and a substantially weakened presidency.

The Kibaki government opposed the constraints to executive power envisioned by Bomas draft and pushed for a legislative process to alter the document (Posner, 2005). The *Wako draft* constitution (named after the Attorney General at the time) instead

[11] A separate system of local authorities with local elections (see Section 5.3).

[12] This shift to violent elections was near immediate. Already in the two elections in the 1990s, more than 2,000 people were killed, about 500,000 were displaced, and many others were intimidated into not voting (Mueller, 2008).

proposed a single layer of government with 70 districts, limited devolution, a unicameral system, and a strong presidency. The Wako draft was adopted by parliament and put to a referendum in 2005. The referendum pitted Odinga, who opposed it and founded the Orange Democratic Movement (ODM) to challenge it, against Kibaki, who favored it. It was ultimately rejected by 58% of the vote. The Bomas draft was never voted on, although it remained part of the political discourse well after 2010.[13] Later, in Section 7 we present counterfactual predictions for these competing proposals.

The 2010 constitution: An important part of the 2008 power-sharing agreement was the creation of a committee of experts to draft a new "harmonized" constitution, with the explicit goal of developing a compromise between a strong presidency and *majimboism*. The final draft proposed to create 47 counties and a bicameral legislature, with a senate that controls the allocation of resources to county governments (Kramon and Posner, 2011; D'Arcy, 2020). Each county was to have an elected governor, with their own cabinet, and an elected county assembly with some legislative and oversight powers (D'Arcy, 2020). Counties would receive a formula-based share of at least 15% of central government revenues to fund a wide range of public goods and services, such as agriculture, health care, pre-primary education, county roads, and water and sanitation.[14]

In 2010, parliament approved the draft, and the new constitution was adopted by 68% of voters in a national referendum. The territorial reform and the new devolved government structure were implemented with the March 2013 national elections. While devolution was planned over a three-year transition period, the new county governors successfully lobbied for a near-immediate transfer of power (D'Arcy, 2020). In fact, the allocation of central government funds has often exceeded the minimum threshold, with counties receiving around 20-30% of the national budget in recent years. These so-called equitable share transfers average about 70-80% of county funds.[15]

The county boundaries were based on Kenya's pre-1992 districts and represented a compromise between size, homogeneity, and legal expediency (D'Arcy, 2020).[16] They closely resemble the last borders implemented by the British colonial government. Hence, while they follow historical ethnic divisions, these borders were not gerrymandered

[13]Odinga still called for the Bomas draft in 2020 (see https://nation.africa/kenya/news/politics/raila-steps-up-call-for-14-regional-governments-1927152).

[14]The committee also proposed the introduction of a prime minister to limit the powers of the presidency. The committee sent the proposal to a parliamentary committee, which abolished the office of prime minister.

[15]Local revenue is typically less than 10%. Only Nairobi and Mombasa have local revenues that comprise a large share of their budgets. The remainder is conditional grants from the government or loans from development partners and cash balances. Counties spend about half of this on personnel and a quarter each on operations and development activities (see the consolidated budgets for 2017/18 available at https://cob.go.ke/reports/consolidated-county-budget-implementation-review-reports/).

[16]In late 2009, the High Court of Kenya declared all districts created after 1992 illegal, leaving only 47 with some legal basis.

according to contemporary political motivations. Moreover, given the large variety of reform proposals and efforts to block reform, voters could neither anticipate how many layers nor how many administrative units the final 2010 proposal would entail.[17] Of course, wholesale constitutional change implies that the reform also coincided with other changes to the existing governance structure. We study those changes in Section 5.3.

The new boundaries fundamentally changed how regions aligned with Kenya's ethnic geography. Figure III shows the pre-reform provinces in panel A and the post-reform counties in Panel B. While the population share of the largest group was 14.4% in the average province, it is 74.7% in the average county, significantly reducing regional fractionalization. 40 counties contain a group that is the majority of the population, and 17 counties are nearly homogeneous (with a single group representing more than 90% of the county population). Qualitative evidence suggests introducing this new layer empowered ethnic groups previously locked out of the national government and expanded patronage politics to gubernatorial elections (D'Arcy and Cornell, 2016). We return to this issue in Section 6 when we discuss mechanisms.

General elections for the presidency, national assembly, and (now) county governments and senators regularly occur every five years.[18] Three presidential elections occurred during the post-reform period: the 2013, 2017, and 2022 general elections. Panel C of Figure III illustrates the timing of the election years and the constitutional reform. In many aspects, political competition has been stable. In all elections from 2002 until 2017, the former incumbent, Kibaki, or his successor, Kenyatta, competed against Odinga and received well over 90% of all votes cast.[19] The new constitution also requires that each candidate name a running mate for vice president. William Ruto (a Kalenjin) and Kalonzo Musyoka (a Kamba) were the vice-presidential candidates in the 2013 and 2017 elections. In 2022, when Kenyatta was term-limited, Ruto narrowly won against Odinga.

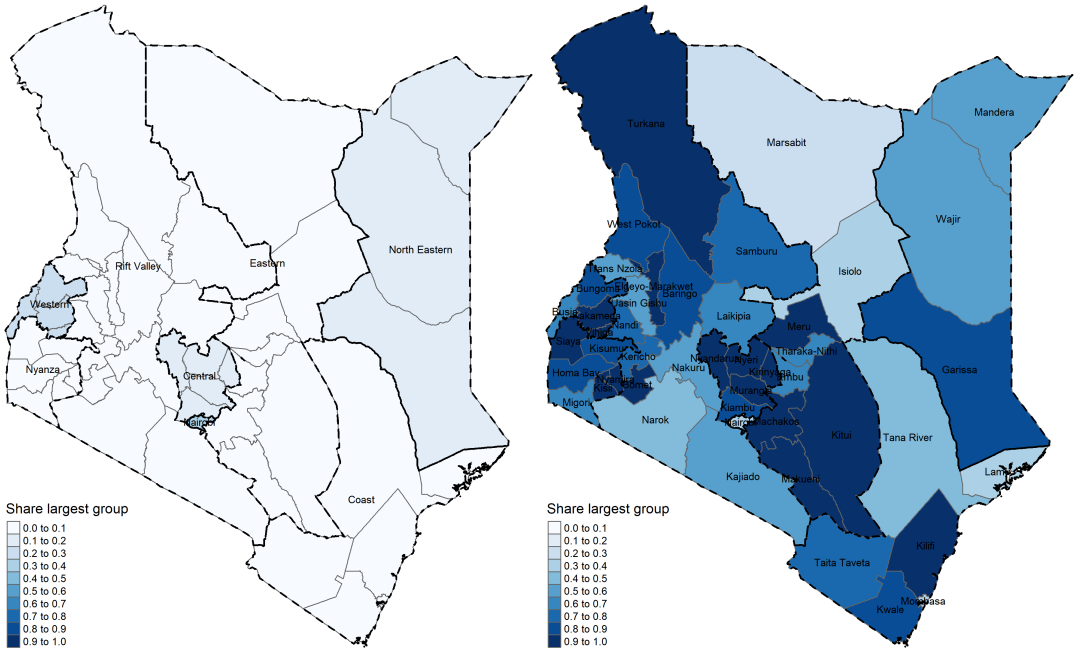
[17] In fact, the committee had initially proposed a two-tier system retaining the original eighth provinces and adding 74 counties but changed this to a single layer with 47 counties after the public review process. The revised harmonized draft was forwarded to a parliamentary subcommittee (PSC) but 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: [...] 47 county governments" (Kramon and Posner, 2011, p. 94).

[18] Before 2010, Kenya had a first-past-the-post system where a plurality of the popular vote was sufficient to win the presidential election. After 2010, 50% percent of the popular vote is needed to win. There was also a requirement to win at least 25% of the votes in at least five of the eight provinces, mirrored in the 2010 constitution by a requirement that 25% of votes need to be won in half of all counties. In practice, the winning candidates in two pre-2010 elections in our sample won with a majority (62.20%) or close to a majority (46.42%) and easily satisfied the province requirement.

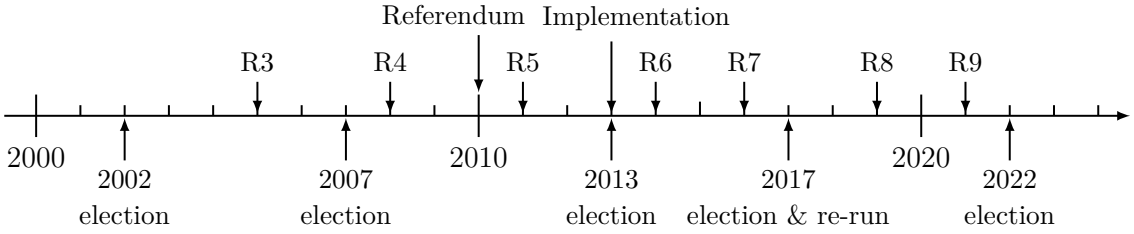
[19] The first run of the 2017 vote was annulled over discrepancies in reported vote totals (see, e.g., https://www.nytimes.com/2017/09/01/world/africa/kenya-election-kenyatta-odinga.html). Odinga boycotted the re-run.

FIGURE III
Kenya: Border reforms and timeline

(A) Pre-reform provinces (B) Post-reform counties



(C) 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 i) the election years, ii) the years in which the constitutional referendum took place and in which the political devolution and the territorial reform were implemented, and iii) 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.)

4. Data and empirical strategy

In this section, we first explain how we use micro data from the 1989 Kenya Population and Housing Census to compute the reform-induced changes in regional fractionalization and ethnic fragmentation for all locations and all ethnicities, respectively. We then discuss how we use multiple Afrobarometer survey rounds to measure ethnic voting at the individual (respondent) level, which is our unit of observation. Finally, we introduce our empirical strategy.

4.1. Computing changes in regional fractionalization and ethnic fragmentation

Our main source of population data is micro data for every 20th household from the 1989 Kenya Population and Housing Census. Although later censuses are available, the 1989 census is 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, which we assign to pre-reform provinces and post-reform counties.[20]

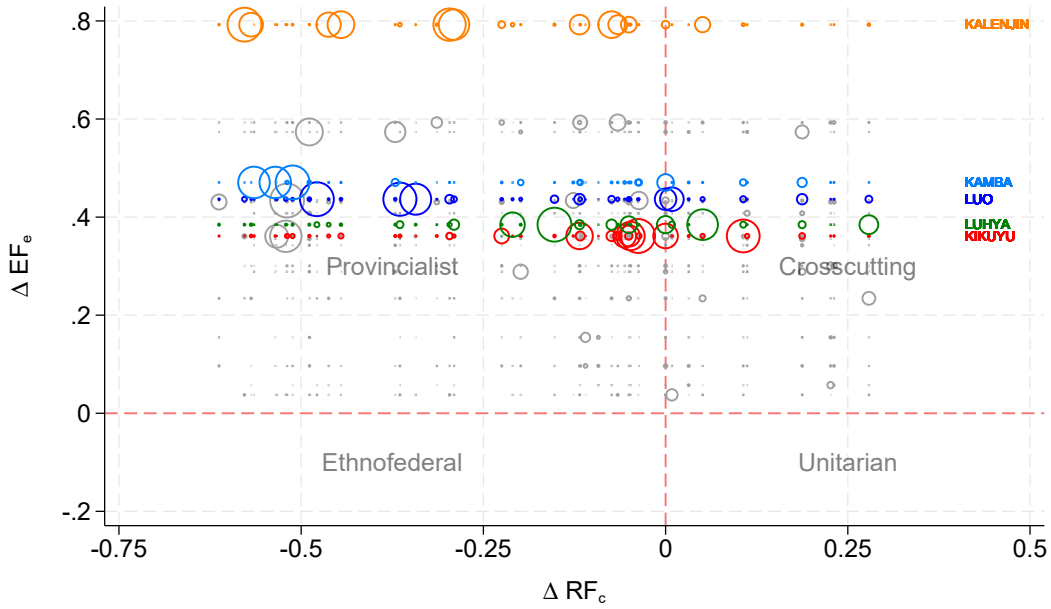
We use these data to compute regional fractionalization RF_c for each region c and ethnic fragmentation EF_e for each group e twice: once based on the pre-reform province borders and once on the post-reform county borders. We denote by ΔRF_c the reform-induced change in regional fractionalization experienced by individuals living in county c. This change equals the difference between the post-reform county-level RF_c and the pre-reform province-level $RF_{p(c)}$ of the province p enclosing future county c. We denote by ΔEF_e the reform-induced change in ethnic fragmentation experienced by individuals of ethnic group e. This change equals the difference between EF_e computed for the post-reform county borders and EF_e computed for the pre-reform province borders. Using pre-reform population data ensures that only the boundary reform drives changes in these measures.

The boundary 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. Hence, our classification suggests that the overall reform is of the provincialist type (see Figure I). However, these averages mask considerable variation across individuals who reside in different places and identify with different ethnicities.

Figure IV illustrates 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). ΔRF_c is depicted on the horizontal

[20]Sublocations 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).

FIGURE IV
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.

axis. It 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, 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. Hence, there are two types of experienced border reforms. A reform towards provincialism for all circles (representing county-ethnicity combinations) to the left of the red vertical line, and a reform towards crosscuttingness for all the circles to the right of the red vertical line. Importantly, there is substantial variation in the direction and degree of ΔRF_c among members of the same ethnic group. For example, some Kalenjin live in counties with $\Delta RF_c < -0.5$ and others in counties with $\Delta RF_c > 0$. Similarly, there is substantial variation in ΔEF_e among residents of the same county. Our empirical strategy exploits this variation within ethnic groups and counties.

4.2. Measuring ethnic voting

We use Afrobarometer survey rounds 3–9 to construct our measures of ethnic voting. These surveys provide information about the location where respondents reside and the

ethnic group with which they identify.[21] Importantly, they also contain a question about voting intentions, which is phrased consistently throughout all these survey rounds: "If presidential elections were held tomorrow, which party's candidate would you vote for?" The suitability of relying on this question depends on how well voting intentions in off-election years can proxy for actual voting. We thus compare voting intentions from Afrobarometer survey round 6, conducted in 2014, with the exit poll data from the 2013 election by Ferree et al. (2014). Figure A.4 shows that group-level voting patterns are very similar across the two data sources, in particular when focusing on coalitions. This similarity lends credibility to our choice of relying on Afrobarometer survey data on voting intentions.

Our main dependent variable is a plurality indicator for ethnic voting, EV_{iet}, which equals one if respondent i would have voted for the party (or coalition) for which the highest number of other respondents of the same ethnic group e would have voted in the same survey round t, and zero otherwise. Panel A of Figure V shows the vote shares of the first and second most popular parties for each of the ten largest groups, averaged across survey rounds.[22] The differences between the vote shares of the groups' first and second most popular parties are substantial, ranging from 22.7 percentage points for the Kamba to 84.5 percentage points for the Luo (with Odinga being a presidential candidate in all elections from 2007 onwards). Panel B shows even larger differences when considering coalitions rather than parties. These large differences suggest that there is indeed considerable voting cohesion in most groups, making the plurality indicator a meaningful measure of ethnic voting.

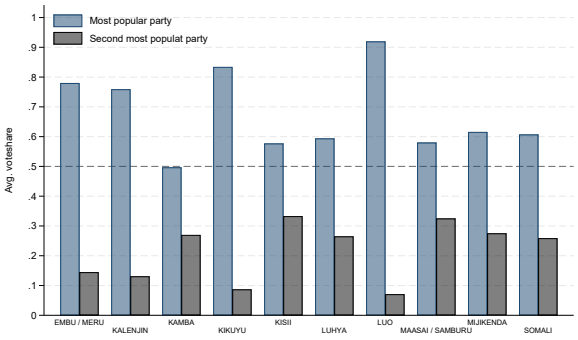
Of course, the appropriate way of measuring ethnic voting depends on the context. Therefore, it is important to understand that the plurality indicator makes sense given the peculiarities of Kenyan politics. One such peculiarity are Kenya's fluid and personalized parties. For example, the current president, William Ruto (a Kalenjin), has been a member of five different parties over the last 20 years. Hence, we prefer taking a "group-based perspective" that focuses on voting cohesion among coethnics in the data rather than a "party-based perspective" that focuses on parties and their platforms (see Huber, 2012, for a classification of these two perspectives). An alternative could be to define ethnic voting based on the ethnicity of a party's leader. We thus present robustness tests in which we define ethnic voting as voting for a party with a co-ethnic presidential or vice-presidential candidate. The disadvantage is that (vice-) presidential candidates typically belong to the big four ethnic groups, such that we cannot identify ethnic voting

[21] We use the coordinates of the cluster locations provided by BenYishay et al. (2017) for rounds 3–6 and the GPS coordinates collected by Afrobarometer in rounds 7–9. We cannot use survey rounds 1 and 2, as they do not report the respondents' ethnicity. Survey rounds 3 and 4 were conducted in the pre-treatment period, survey round 5 in the period between the referendum and the implementation of the reform, and survey rounds 6–9 in the post-implementation period (see panel C of Figure III).

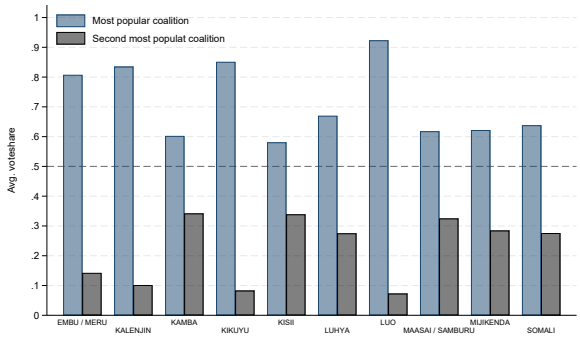
[22] Table A.2 lists the most popular parties by ethnic groups and Afrobarometer survey rounds.

FIGURE V
Ethnic voting across all survey rounds

(A) Parties, biggest 10 groups



(B) Coalitions, biggest 10 groups



Notes: Panel A plots the vote shares of the two most popular parties for or each of the largest 10 ethnic groups in Kenya, averaged across Afrobarometer survey rounds. Panel B replicates panel A but aggregates the political parties at the level of coalitions. Note that the voteshares do not sum up to one because there are many parties and more than two coalitions in many years. Panel C plots the average voteshare for the most popular party (in blue) and the party headed (either presidential candidate or VP nominee) by a coethnic candidate (in red). Panel D replicates panel C but uses coalitions instead of parties.

for respondents belonging to other ethnic groups, i.e., for around half the population.

Another peculiarity of Kenyan politics is that parties form ad hoc coalitions to win elections. These coalitions typically include two parties with (vice-)presidential candidates from different ethnic groups. Thus, we also compute the plurality indicator (and all other measures for ethnic voting) at the level of coalitions supporting the same presidential ticket. The coalitions are assigned to parties based on information from the last election unless the party has already publicly declared to switch camps in the next election at the time of the Afrobarometer survey (see Table A.3 for details).

In further robustness tests, we use three alternative measures of ethnic voting based on the vote shares of the different ethnic groups (as is the plurality indicator). First, we use the share of a respondent's co-ethnics who voted for the same party. This measure can account for the fact that the second most popular party might still be somewhat of an "ethnic vote choice" for a Kamba, but it complicates the interpretation. Second, we use a majority (as opposed to a plurality) indicator, which equals one if respondent i would have voted for a party (or coalition) for which at least 50 percent of co-ethnic respondents would have voted in the same survey round, and zero otherwise. This measure implies that there is no "ethnic vote choice" for some groups in some survey rounds, e.g., the Kalenjin in round 5 or the Kamba in rounds 6–9. Third, we use an over-representation indicator similar to Amodio et al. (2024), who define ethnic voting as voting for the party with the highest share (rather than level) of co-ethnic voters. Hence, if there is a small party who gets only votes from one group, then this party would be considered the groups' ethnic party even if 90 percent of group members voted for another party.

4.3. Empirical strategy

Our units of observation are repeated cross-sections of respondents i who identify with an ethnic group e, reside in a (post-reform) county c, and are surveyed in a survey round t. We use the Afrobarometer surveys not only for information on voting intentions but also for information on age, gender, various assets, and urban versus rural locations to proxy for other common characteristics that predict a person's political leanings.[23] The complete information is available for 7,225 respondents from 1,207 different clusters and 17 different ethnic groups.[24]

Our identification strategy relies on the following flexible generalized difference-in-differences specification:

$$EV_{it} = \beta\left(\Delta RF_c \times D_t\right) + \gamma\left(\Delta EF_e \times D_t\right) + \mathbf{Z}'_{it}\boldsymbol{\xi} + \mu_{ce} + \lambda_t + \epsilon_{it}, \tag{3}$$

where ΔRF_c is the change in regional fractionalization, ΔEF_e the change in ethnic fragmentation, D_t indicates the post-reform period (Afrobarometer rounds 6 to 9), the vector $\mathbf{Z}_{it}$ includes proxies for other cleavages (such as age, gender, economic status), μ_{ce} are county–by–ethnicity fixed effects, and λ_t are survey-round-fixed effects. To account for the clustered nature of the treatment, we use two-way clustered standard errors at the province-by-ethnicity and county levels.

Our coefficients of interest are β and γ. They capture the effects of the reform-induced changes in regional fractionalization and ethnic fragmentation on ethnic voting. The identifying variation comes from how the changes in regional fractionalization and ethnic fragmentation, which respondents experience, correlate with ethnic voting in different years. We interpret these coefficients as average causal responses. The fixed effects play an important role in this interpretation. The county–by–ethnicity fixed effects net out ..., while the survey-round-fixed effects absorb the overall non-linear trend in ethnic voting patterns across elections (including any pre-post level effect captured by D_t).

The key identification assumption is that changes in ethnic voting for respondents living in counties (identifying with groups) that experienced small changes in regional fractionalization (or ethnic fragmentation) provide a good counterfactual for respondents in counties (identifying with groups) that experienced larger changes if their border-induced change in heterogeneity would have been similar. In other words, we need more than standard parallel trends, which requires that unobserved time-varying confounds behave similarly in groups or counties that are treated differently by the border reform (i.e., in terms of ΔRF_c or ΔEF_e). As Callaway et al. (2021) show, we also need to assume a particular form of treatment homogeneity that rules out that respondents select into

[23] See Online Appendix A.3.1 for details on these control variables and Online Appendix A.4 for summary statistics for all variables.

[24] Online Appendix A.2 illustrates the spatial distribution and the size of the Afrobarometer survey clusters.

higher intensities of ΔRF_c or ΔEF_e.[25] That is, the average outcomes over time for a high-intensity treatment group are a good counterfactual for outcomes in any lower-intensity treatment group if they had been assigned the same intensity. If such a "strong parallel trends" assumption is satisfied, then two-way fixed-effects estimation of these two coefficients identifies weighted averages of the average causal responses at different treatment intensities of ΔRF_c or ΔEF_e.[26]

We run a number of tests to ensure that no anticipation and no selection on gains are plausible in our setting. We test part of this assumption using event study plots and leverage survey round specific effects of ΔRF_c and ΔEF_e. We also test if the characteristics of respondents, such as their age, residency (urban/rural), assets, gender are balanced with respect to ΔRF_c and ΔEF_e (Figure B-1 suggest they are), and examine symmetry for positive and negative values of ΔRF_c (but not ΔEF_e, since $\Delta EF_e > 0$ for all e). Finally, selection on gains implies that respondents would have to move to districts with larger ΔRF_c as the reform takes effect (or change their ethnic identity in the case of ΔEF_e). While such a migration response is possible, the reform and its effects on ethnic voting were difficult to anticipate. Hence, such a response would take some time and affect the medium-term estimates more than the immediate response.

5. Results

In this section, we present pre-trends and our main results. We use the point estimates to evaluate how the border reform changed ethnic voting in Kenya. We then provide evidence showing that the estimated effects are driven by the border changes from provinces to counties rather than other parts of the constitutional reform, such as border changes of lower-tier administrative units or features of the devolution process. Finally, we present a battery of robustness tests.

5.1. Pre-trends

We start by studying the effects of changes in regional fractionalization and ethnic fragmentation on ethnic voting in an event study. Panel A of Figure VI presents the β_t's capturing the (potentially time-varying) effects of a change in regional fractionalization

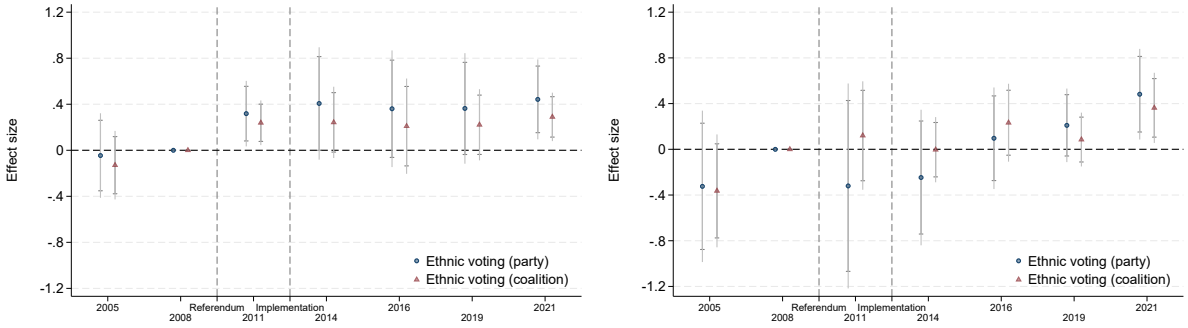
[25] This treatment homogeneity assumption is stronger than assuming unconfoundedness of the treatment, which only requires that ΔRF_c and ΔEF_e are not proxying for some other county or group characteristic that changes as a result of the reform and is also correlated with voting patterns.

[26] Two-way fixed effects estimation does not always recover treatment effects in staggered difference-in-differences and event study designs with treatment heterogeneity over treated cohorts and/or dynamic treatment effects (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. Callaway et al. (2021) show that the weights on the underlying causal responses are always positive if the data are a proper panel. We interpret our repeated cross-section estimates along these lines.

on ethnic voting, and panel B the γ_t's capturing the effects of a change in ethnic fragmentation. Blue circles represent results when using the party-based measure of ethnic voting, and red triangles when using the coalition-based measure of ethnic voting. For both measures of ethnic voting, we cannot reject the null hypothesis of no pretends for the two sets of coefficients of interest. Moreover, 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 borders became politically relevant with the 2013 election.

FIGURE VI
Event study estimates

(A) Time-varying effects of ΔRF_c (B) Time-varying effects of ΔEF_e



Notes: The figure shows event study coefficients for the effect of reform-induced changes in regional fractionalization (ΔRF_c) and ethnic fragmentation (ΔEF_e) on our main indicator for ethnic voting, i.e., plurality party (blue circles) or plurality coalition (red triangles). Specifically, we estimate $EV_{it} = \sum_t \beta_t \Delta RF_c + \sum_t \gamma_t \Delta EF_e + \mathbf{Z}'_{it}\boldsymbol{\xi}_t + \mu_{ce} + \lambda_t + \epsilon_{it}$, where t are survey years and $t = 2008$ the omitted reference category. Panel A focuses on ΔRF_c and reports the β_t's, and panel B on ΔEF_e and reports the γ_t's. All specifications include county-by-ethnicity fixed effects and time-fixed effects. 95% and 90% confidence intervals are plotted as gray bars. They are based on two-way clustered standard errors at the province-by-ethnicity level and county level.

The effects of a change in regional fractionalization and ethnic fragmentation materialize once the reform is implemented. In the case of regional fractionalization, the effect size is fairly constant across the post-treatment period (panel A), while we observe some build-up of the effect of ethnic fragmentation (panel B).[27]

Furthermore, Figure B-3 shows that there are no anticipation or treatment effects with respect to the probability of voting or disclosing the party a respondent intends to vote for across survey rounds. Finally, we find no evidence that this differential response to our treatments is driven by changing self-identification patterns—with the nation or one's ethnic group—between members of those groups likely in local control vs. not (see Figure B-4).[28] We take this as suggestive evidence that ethnofederal reforms do not

[27] Figure B-2 shows that increases and decreases in regional fractionalization have symmetric effects (while ethnic fragmentation decreases for all ethnic groups).

[28] There is an important caveat due to the way Afrobarometer surveys ask about self-identification. We

necessarily lead to less identification with the nation (or perhaps even separatism).

5.2. Main results and evaluation of the reform

TABLE I
Main results: Difference-in-difference

	Dependent variables: Ethnic voting					
	Party			*Coalition*		
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta RF_c \times D_t$	0.418**	0.421**	0.407**	0.315***	0.316***	0.291***
	(0.170)	(0.172)	(0.196)	(0.092)	(0.094)	(0.108)
$\Delta EF_e \times D_t$	0.396**	0.389**	0.366**	0.414***	0.409***	0.388***
	(0.151)	(0.152)	(0.151)	(0.112)	(0.111)	(0.113)
Ethnofederal effect						
$-(\beta\hat{\sigma}_{\Delta RF_c} + \gamma\hat{\sigma}_{\Delta EF_e})$	-0.133	-0.132	-0.126	-0.119	-0.118	-0.111
	(0.042)	(0.043)	(0.046)	(0.026)	(0.027)	(0.028)
County-by-ethnicity FE	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓
Controls	–	✓	✓	–	✓	✓
Controls $\times D_t$	–	–	✓	–	–	✓
Observations	6328	6328	6328	6328	6328	6328

Notes: The table reports the regression results of regressing our main ethnic voting proxy (plurality, based on the party classification columns 1 to 3 and coalition classification columns 4 to 6) on the post-treatment indicator times change in regional fractionalization ($\Delta RF_c \times D_t$), and change ethnic fragmentation ($\Delta EF_e \times D_t$). All specifications include county-by-ethnicity and time-fixed effects. Controls include the age of a respondent, indicators if they live in an urban survey cluster, are female, and indicators whether respondents own a TV, radio, or motorized vehicle. Standard errors are two-way clustered at the province-by-ethnicity and county levels. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

We collapse the event study to our preferred difference-in-differences design (see equation 3). We drop survey round 5 (in 2011), which is neither clearly in the pre-treatment nor the post-treatment period (resulting 897 fewer observations). Table I presents the corresponding results. Column 1 shows that increases in regional fractionalization and ethnic fragmentation are associated with higher incidences of party-based ethnic voting. Our headline findings are similar when using the coalition-based measure of ethnic voting (column 4), adding respondent-level controls (columns 2 and 4) or respondent-level controls and their interaction with the post-treatment indicator (columns 3 and 6). Moreover, we cannot reject the equality of both coefficients in any column. These findings are consistent with the idea that ethnofederal structures (characterized by low RF_c and EF_e) de-ethnizise politics at the center while crosscutting

cannot rule out that ethnofederal reforms increase (or decrease) both group identification and national identification—similar to the Nigerian youth service program studied by Okunogbe (2024).

structures (characterized by high RF_c and EF_e) increase the importance of ethnicity in national elections and national politics more generally. The coefficients for ΔRF_c and ΔEF_e capture precisely this trade-off, and the magnitudes suggest it close to one-to-one.

The estimated effects are quantitatively important. The sample mean of ΔRF_c is -0.168, and the estimated β is 0.421 (column 2). Hence, our results predict that the average reform-induced change in regional fractionalization *reduced* ethnic voting by 7.1 percentage points. Similarly, the sample mean of ΔEF_e is 0.384, and the estimated γ is 0.389 (column 2), predicting that the average reform-induced change in ethnic fragmentation *increased* ethnic voting by 14.9 percentage points. Thus, the predicted net average effect of the reform would be an increase in ethnic voting of roughly 7.8 percentage points. Table I also reports the estimated effect of a standard deviation reduction in both measures, corresponding to a large ethnofederal reform, below the main estimates. The joint effect is stable at around -13 percentage points for parties and -12 percentage points for coalitions. In summary, the net effect of any boundary reform depends on how large reductions in regional fractionalization are relative to the increases in ethnic fragmentation.

TABLE II
Aggregate effects of reform on ethnic voting

Ethnic group	Predicted change in ethnic voting due to			Population share
	ΔEF	ΔRF	both	
Kikuyu	0.141	-0.016	0.124	0.208
Luhya	0.150	-0.027	0.123	0.148
Luo	0.170	-0.115	0.055	0.124
Kamba	0.183	-0.188	-0.005	0.115
Kalenjin	0.308	-0.136	0.172	0.113
Embu / Meru	0.169	-0.150	0.018	0.063
Kisii	0.140	-0.198	-0.057	0.062
Mijikenda	0.223	-0.150	0.073	0.047
Maasai / Samburu	0.231	-0.053	0.178	0.023
Turkana	0.168	-0.181	-0.013	0.013
Change in ethnic voting for big 4: 0.092				
Change in ethnic voting for Kenya: 0.080				

Notes: The table reports the predicted aggregate changes in party-based ethnic voting for the ten largest groups. These changes are computed by multiplying the difference-in-difference coefficients estimated in column (3) of Table I with the group-county-specific populations. The table also reports the change in the population-weighted predicted ethnic voting change for the big four ethnic groups and the country as a whole.

The average change in ethnic voting masks substantial differences across ethnic groups. Table II shows the predicted changes in ethnic voting for each of the largest ten ethnic groups separately by using population-weighted averages of the changes in

regional fractionalization and ethnic fragmentation. The reform substantially increased ethnic voting among the Kalenjin and the Kikuyu but had only modest effects on the Luo and the Kamba, based on our predictions. These differences are likely to have been electorally significant. According to official counts, Kenyatta (a Kikuyu) won the 2013 general election with 50.1% of the votes, while Odinga (a Luo) received 43.3%. There would have been a run-off election if Kenyatta had missed an absolute majority. Hence, the reform's differential effect on ethnic voting among the Kikuyu and the Luo likely contributed to Kenyatta's (first-round) victory.

Our results so far suggest that political border reforms can reduce ethnic voting in the short and medium run if they lead to more ethnofederal structures (characterized by lower RF_c and EF_e), but not if they lead to more crosscutting structures (characterized by higher RF_c and EF_e). Given that Kenya's 2010 reform is predicted to have increased ethnic voting on average, it clearly did not strike an optimal balance. An open question is whether alternatives such as the Boma and Wako proposals or simply less "provincialist" border reforms that would have reduced regional fractionalization without strongly increasing ethnic fragmentation could have achieved reductions in ethnic voting. We discuss such alternatives in Section 7.

5.3. Sensitivity

Additional administrative-territorial changes: As discussed in Section 3, the constitutional reform did not only replace the eight provinces with 47 counties as the primary subnational administrative units but also included two other administrative-territorial changes. First, the number of electoral constituencies was increased from 210 to 290 (and MPs can use development funds for projects in their constituencies). Second, 175 local authorities (comparable to municipalities in other countries) were abolished, while their basic functions were subsumed into elected county governments. In addition, another administrative territorial change 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 (BBC Monitoring Africa, 2009).

A priori, these three changes are unlikely to affect ethnic voting in presidential elections. First, the constituency change should only be relevant for parliamentary (rather than presidential) elections. Second, the abolition of local authorities should, at most, affect local (but not presidential) elections. However, the local authorities were weak, lacked sufficient funds, and had very limited responsibilities. Third, the newly created and short-lived 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 weakened the importance of any one district.

We proceed in three steps to rule out that these other administrative-territorial

changes drive our main results. First, we collect data on the borders changed by the reform and identify the appropriate counterfactual. Specifically, changes across electoral constituencies and changes from local authorities to counties and districts to counties (see Online Appendix A for details). Second, we use the pre- and post-reform borders for these three boundary changes to compute the corresponding changes in subnational (regional) fractionalization and ethnic fragmentation.[29] We then rerun our main specification while controlling for the impact of the changes in subnational regional fractionalization and ethnic fragmentation resulting from these other boundary changes. Columns 1–3 of Table III show that the estimates on our main treatments remain similar and size and precision. Moreover, none of the alternative treatments is statistically different from zero.

Devolution and reform support: While our time-fixed effects absorb the overall effect of devolution, devolution might still heterogeneously impact voting behavior in a way that correlates with our treatment. We control for three ways by which the devolution might condition our main effects. First, voters in smaller political regions may need to rely less on ethnicized national politics. Hence, the reform could have less of an impact on ethnic voting for respondent experiencing a larger decrease in their political region's population size (i.e., the difference between the county- and the province-level population size). Second, voters close to the centers of regional power may need to rely less on ethnicized national politics. Hence, the reform could have a smaller effect for respondents being located closer to the regional capital after the reform than before it. Third, the constitutional reform could have had a differential impact on ethnic voting depending on its popularity in the different provinces (measured by the province-level share of voters voting in favor of the constitutional referendum). Columns 4 to 6 of Table III show that the coefficient estimates on our main treatments remain similar in size and remain statistically significant when controlling for these three additional factors.

Further robustness checks: We conduct a battery of additional tests. First, we employ logistic regressions and estimate marginal effects. Table B-1 and Figure B-6 show that our results remain qualitatively similar and that the marginal effect of ΔRF_c does not depend on ΔEF_e, or vice versa, which is important for the extrapolations we conduct later on.

Second, we test if our results are sensitive to employing alternative measures of ethnic voting. Figure B-7 documents that we obtain similar effects when using the likelihood to vote the party or coalition that receives the majority of votes from a respondents group, use the continuous vote share, the probability to vote for the party most overrepresented by a respondents group (similar to Amodio et al., 2024), or alternative coalition codings (based on the observed coalitions of the past or next election). We obtain similar results

[29] There is no clear pattern in how the different measures are correlated (Table A.4).

TABLE III
Controlling for other constitutional changes

	Dependent variables: Ethnic voting (party)					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta RF_c \times D_t$	0.422**	0.415**	0.410**	0.430**	0.405**	0.445***
	(0.181)	(0.190)	(0.183)	(0.194)	(0.183)	(0.137)
$\Delta EF_e \times D_t$	0.432***	0.387**	0.382**	0.385**	0.399**	0.382***
	(0.157)	(0.160)	(0.163)	(0.149)	(0.157)	(0.100)
$\Delta RF_c(Constituencies) \times D_t$	-0.037					
	(0.098)					
$\Delta EF_e(Constituencies) \times D_t$	0.511					
	(0.311)					
$\Delta RF_c(Local\ authorities) \times D_t$		-0.036				
		(0.043)				
$\Delta EF_e(Local\ authorities) \times D_t$		0.033				
		(0.411)				
$\Delta RF_c(Districts) \times D_t$			-0.023			
			(0.049)			
$\Delta EF_e(Districts) \times D_t$			0.094			
			(0.383)			
Δ *Unit population* $\times D_t$				-0.020		
				(0.075)		
Δ *Capital proximity* $\times D_t$					0.035	
					(0.070)	
Support referendum $\times D_t$						0.134**
						(0.065)
County-by-ethnicity FE	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓
Observations	5895	5984	5987	6328	6328	6328

Notes: The table reports the regression results of regressing our main ethnic voting proxy (plurality)), based on the party classification on the post-treatment indicator times change in regional fractionalization ($\Delta RF_c \times D_t$), and change ethnic fragmentation ($\Delta EF_e \times D_t$), controlling for alternative border changes (columns 1 to 3). Specifically, changes between electoral constituencies, local authorities to counties, and districts to counties. Columns 4 and 5 add controls for proxies of the degree of decentralization: The population size of the political unit, the average distance of respondents to the county capital compared to the province capital. Column 6 controls for the province-level support of the constitutional referendum. All specifications include county-by-ethnicity and time-fixed effects. Controls include the age of a respondent, indicators if they live in an urban survey cluster, are female, and indicators whether respondents own a TV, radio, or motorized vehicle. Standard errors are two-way clustered at the province-ethnicity and county levels. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

if we use probability to vote for a coethnic presidential or vice-presidential candidate for the big four (Kalenjin, Kamba, Kikuyu, and Luo). All in all, these tests show that the main results hold up under a variety of different ways of measuring ethnic voting, although precision sometimes becomes an issue.

Third, we test for the impact of sample perturbations. Figure B-8 shows that

our results for regional fractionalization remain similar when using the survey weights provided by Afrobarometer, excluding the Rift Valley (which is mostly affected by the violence in 2007 and experienced selective out-migration), including survey round 5, controlling for language matches between the interviewer and respondent in the Afrobarometer, or controlling for the post-reform political alignment between counties and the presidency that could potentially influence the voting decision. Results are also mostly similar for EF, although excluding the Rift Valley and including survey round 5 reduces the effect size and precision of the ethnic fragmentation estimate. Note that excluding the Rift Valley greatly diminishes the variation in ΔEF_e as we lose most of the Kalenjin and other groups residing there which experience the largest changes in ethnic fragmentation (see Figure IV).

Finally, we show in Figure B-9 that the statistical significance of our main results is robust to various ways to cluster out standard errors.

6. Mechanism: Local control

A key motive for voting along ethnic lines in national elections is that presidents often favor their 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; De Luca et al., 2018). Horowitz (1985) suggests that the tranquilizing effect of ethnofederal reforms arises precisely because ethnic groups controlling the provision of local public goods become empowered relative to the national government.

In Online Appendix C, we outline a simple theoretical framework that applies these ideas to understand why ethnofederal reforms reduce ethnic voting at the national level. The intuition is as follows. The central government raises most of the revenue and distributes some share of this revenue to local governments according to population size. Crucially, the performance (or honesty) of presidents matters in that it affects how much revenue is collected. The national and the local government both provide public goods, which they may bias in favor of specific locations and groups. Voters vote for the presidential candidate who maximizes their level of national and local public goods. The framework yields three key results. First, devolution of spending powers shifts the vote towards more an able or honest and not necessarily coethnic presidential candidate because the importance of local public goods increases vis-à-vis national public goods, while the president remains important for generating revenues. Second, members of the local majority group in relatively homogenous counties get the desired public goods locally, so their preferences shift towards able and honest candidates (and higher transfers) over coethnic candidates at the national level. Third, larger regions benefit more from economies of scale, and voters in these regions benefit more from an able and

honest, relative to a coethnic, president.[30]

The first result speaks to the importance of devolution for reducing ethnic voting. The other two suggest that we should expect ethnofederal reforms to reduce ethnic voting primarily for large groups that control the local government. Government control is easiest for the largest groups in relatively homogeneous counties, and a homogeneous county is large in a relative sense if the group that controls it is not fragmented across other units. Hence, we expect the effects of changes in both regional fractionalization and ethnic fragmentation on ethnic voting to be largest for the groups who control the county government.

We provide two pieces of evidence for this mechanism. We first test whether the largest groups in a county are most likely to control the executive. We use data from the 2016 diversity audit of the county administration, which provides us with the ethnic makeup of the governor's cabinet, together with data from D'Arcy (2020) on the ethnicity of governors that came into power with the 2013 election, and data from 1989 census aggregated to the level of county-groups (our unit of observation for this step). The governor's cabinet consists of the county executive committee (CEC), which implements development projects, supervises service delivery, and determines the organization of the county's departments, and the country public service board (CPSB), which establishes public service jobs and appoints people to these jobs.

Panel A of Table IV shows the governor usually has the ethnicity of the largest group. This probability is about 84.4% using only within-county across groups and within-group variation across counties. Moreover, large groups controlling the governorship also control about 77–78% of the two boards, on average, regardless of whether we look at them separately or together. This has interesting implications for ethnic politics at the local level. On the one hand, counties have become a significant source of patronage for groups that did not share in executive power in pre-reform Kenya, introducing a new logic of "everyone's turn to eat" (D'Arcy and Cornell, 2016). On the other hand, certain groups that are not locally in control might find themselves in a heterogeneous county dominated by another group and, hence, face a new form of exclusion.

For our second test, we go back to our main specification but interact our two treatments, $\Delta RF_c \times D_t$ and $\Delta EF_e \times D_t$, with measures of local control. We use two proxies. First, an indicator for whether an ethnic group is the largest group in the county (based on 1989 data). Second, an indicator of *de facto* unitary local government. This indicator equals one when an ethnic group is the largest group in the county, has a coethnic governor, and has a share of coethnic members in the executive boards of at least 94 percent (which is the median share for groups with a coethnic governor). Panel

[30]This argument is related to the one in Boffa et al. (2016), who shows that information heterogeneity pushes towards centralization (larger units) because the share of informed voters increases accountability and decreases rent extraction of office holders.

TABLE IV
Mechanism: Local political control

Panel A: Determinants of local control

	Dependent variables: Local control			
	Coethnic governor	*CEC share*	*CPSB share*	*CEC & CPSB share*
	(1)	(2)	(3)	(4)
Largest group	0.844***	0.231**	0.257**	0.242**
	(0.054)	(0.107)	(0.112)	(0.108)
Coethnic governor		0.538***	0.523***	0.532***
		(0.113)	(0.117)	(0.114)
County FE	✓	✓	✓	✓
Ethnicity FE	✓	✓	✓	✓
Observations	1505	1505	1505	1505

Panel B: Local control and ethnic voting

	Dependent variables: Ethnic voting			
	Party	*Coalition*	*Party*	*Coalition*
	Local control proxied by:			
	Largest group		*Unitary government*	
	(1)	(2)	(3)	(4)
$\Delta RF_c \times D_t$	0.238	0.080	0.465***	0.304***
	(0.155)	(0.162)	(0.152)	(0.084)
$\Delta RF_c \times D_t \times local\ control_{ce}$	0.140	0.259	0.215	0.235**
	(0.230)	(0.164)	(0.153)	(0.099)
$\Delta EF_e \times D_t$	0.312	0.336*	0.134	0.212**
	(0.238)	(0.194)	(0.155)	(0.084)
$\Delta EF_c \times D_t \times local\ control_{ce}$	0.406	0.294*	0.444**	0.449***
	(0.249)	(0.163)	(0.177)	(0.132)
$D_t \times local\ control_{ce}$	-0.041	-0.043	-0.067	-0.076
	(0.136)	(0.094)	(0.116)	(0.057)
County-by-ethnicity FE	✓	✓	✓	✓
Time FE	✓	✓	✓	✓
Observations	6328	6328	6328	6328

Notes: Panel A reports the results from of regressing four different proxies for political control at the county level on an indicator for the largest ethnic group in the county (all columns) and an indicator for having a coethnic governor (columns 2–4). The proxies for local control are an indicator for having a coethnic governor (column 1), the share of coethnics in the county executive committee (CEC; column 2), the share of coethnics in the county public service board (CPSB; column 3), and the share across both the CEC and the CPSB (column 4). Standard errors are clustered at the county level. The data for these regressions are a tribe-county cross-section based on the census data. Panel B reports the results from regressing the plurality indicator of ethnic voting (based on parties and coalitions) on the same explanatory variables as in Table I plus interactions with measures of local government control. These measures are an indicator for the largest group in the county (columns 1–2) and an indicator for unitary local government control, which is equal to one if an ethnic group is the largest group in the county, has a coethnic governor, and has a share across the CEC and the CPSB of at least 94 percent (which is the median share for groups with a coethnic governor). All specifications include county-by-ethnicity and time-fixed effects. Controls include the age of a respondent, indicators if they live in an urban survey cluster, are female, and indicators whether respondents own a TV, radio, or motorized vehicle. Standard errors are two-way clustered at the province-ethnicity and county levels. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

B of Table IV shows that the data support the predictions of our theoretical framework. The interactions of our two explanatory variables and our proxies for local control always point in the expected direction. The results are strongest for unitary local governments and ethnic voting at the coalition level. In column (4), the effect of ΔRF_c is considerably stronger for groups with a unitary local government, in line with the notion that local control of the provision of public goods makes it easier for them to cross the ethnic line nationally. Similarly, the effect of ΔEF_e is larger for those groups, suggesting that economies of scale matter in the sense that having more members of a group in the same region reduces ethnic voting.

7. Counterfactual border designs

Our results show that Kenya's border reform likely increased ethnic voting and the salience of ethnicity in national elections. As we outlined in Section 3, Kenya has a history of different constitutional proposals that would likely have had very different electoral implications. We explore these proposals in this section, along with a benchmark border design that could minimize ethnic voting.

The Bomas and Wako draft constitutions: Recall that the key provision of the Bomas draft constitution was strong devolution to a two-tiered system of 14 regions and 74 districts (including the four boroughs of Nairobi). Creating more ethnically homogeneous regions was one of the considerations, which was to be balanced with the costs of running the regions and economies of scale. Both tiers were supposed to have local assemblies, but the draft gave regions extensive powers, which is why we focus on the 14 regions as the primary layer in the Bomas draft. Panel A of Figure VII illustrates the regions that the Bomas draft envisioned. We superimpose them on the 70 districts (without the four boroughs of Nairobi) that existed at the time. Recall also that the Wako counterproposal put forth by the Kibaki government included a single layer of devolved government with 70 districts. Panel B of Figure VII shows the Wako-draft districts, which also correspond to the lower layer in the Bomas draft.[31] For comparison, panel D of Figure VII illustrates the ethnic geography of Kenya at this level of aggregation (based on the 1989 census).

The optimal partition: Understanding the implications of different constitutional proposals is difficult without some benchmark of how much ethnofederalism would have been possible in Kenya. To this end, let us consider a policymaker aiming to minimize ethnic voting in national elections. This policymaker focuses solely on various border designs for a single devolved layer rather than other elements of constitutional

[31]The number of districts was not explicitly mentioned in the Wako draft, leaving the option for parliament to create more districts later on.

reform. They evaluate these designs at the same time as the Bomas and Wako drafts, using the 70 districts existing at the time as a reference point. The policymaker has access to data on the treatment effects estimated earlier and the distribution of the population across districts, including their ethnic affiliation. However, they face two realistic constraints, met by 2010 constitutional reform and (mostly) adhered to by the draft constitutions. First, the new political regions must be nested within the former provinces.[32] Second, these political regions have to be contiguous.[33] These constraints allow us to enumerate the space of all contiguous partitions completely. Now the policymaker needs to consider "only" approximately 30.38 million contiguous divisions of 70 districts into $K \in \{8, 9, 10, \ldots, 70\}$ alternative political regions.[34]

To find the optimum among these candidate maps, the policymaker must determine the design that balances regional fractionalization RF_c and ethnic fragmentation EF_e. Ideally, the two indices would both be low, but an increase in the number of political regions tends to pull them in opposite directions (by decreasing average RF_c but increasing average EF_e). Hence, the objective is to find the border design, $\mathcal{D}^*$, that balances these two effects with some weights—say, $\omega \in [0, 1]$ for RF_c and $(1-\omega)$ for EF_e. The policymaker uses this weight to determine the design that minimizes the ω-weighted average of our two heterogeneity measures.[35] Our estimates in column (3) of Table I suggest $\omega = 0.52$.

Panel C of Figure VII shows the 17 regions implied by the optimal map. Moreover, using a grid search, we find that the optimal map is stable for $\omega \in [.457, 0.541]$, which is almost perfectly centered on an equal weight on both components and shows that the optimal border design is robust to some uncertainty in the estimated treatment effects.

Electoral implications of counterfactual maps: We use the unit-by-group-level population data for each proposed map to compute regional fractionalization and ethnic fragmentation. As before, we take the difference of these measures with the pre-reform situation to compute the counterfactual effects of the constitutional proposals and optimal map using the coefficient estimates from column (2) of Table I. Despite relying on strong

[32]The Bomas draft violates this in three instances (see regions four, seven, and 11 in Panel A of Figure VII, which all cross into Central Province.

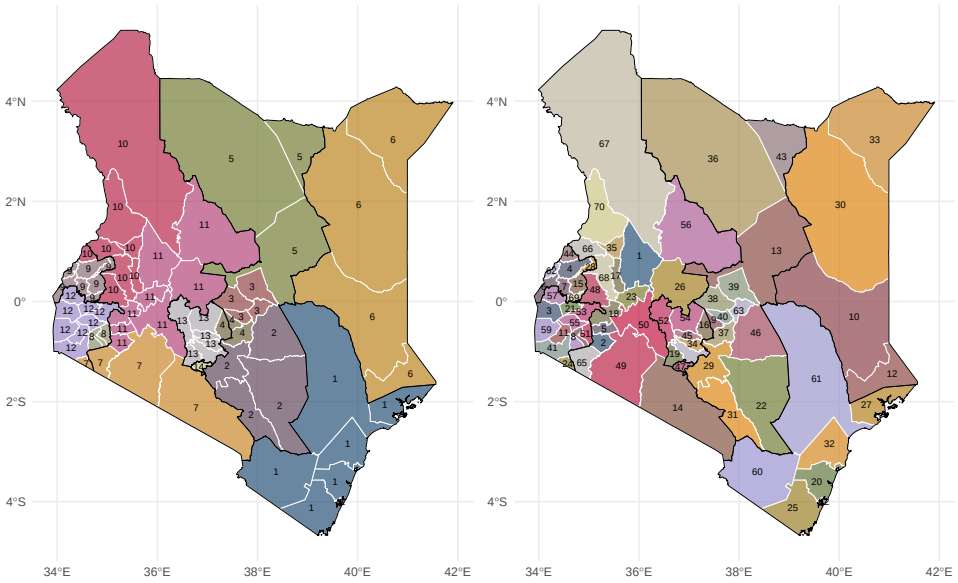
[33]Without these constraints, the number of possible mappings of sub-provincial units into different political regions is extremely large, and optimizing over potentially unbounded sample spaces is challenging (Fifield et al., 2020). For instance, there are already approximately 2.69×10^{72} ways of partitioning 70 sub-provincial units into exactly 20 political regions.

[34]The constraint that new political borders must be nested within the former provinces allows us to determine optimal partitions within each province separately, from which we can later construct the complete map of optimal borders. It also imposes a minimum $K = 8$. Our local homogeneity and group compactness measures are additively separable and do not depend on changes in other provinces. This is easy to see for county-level ΔRF_c but also applies to the group-level ΔEF_e, where changes in the other (unreformed) provinces cancel out.

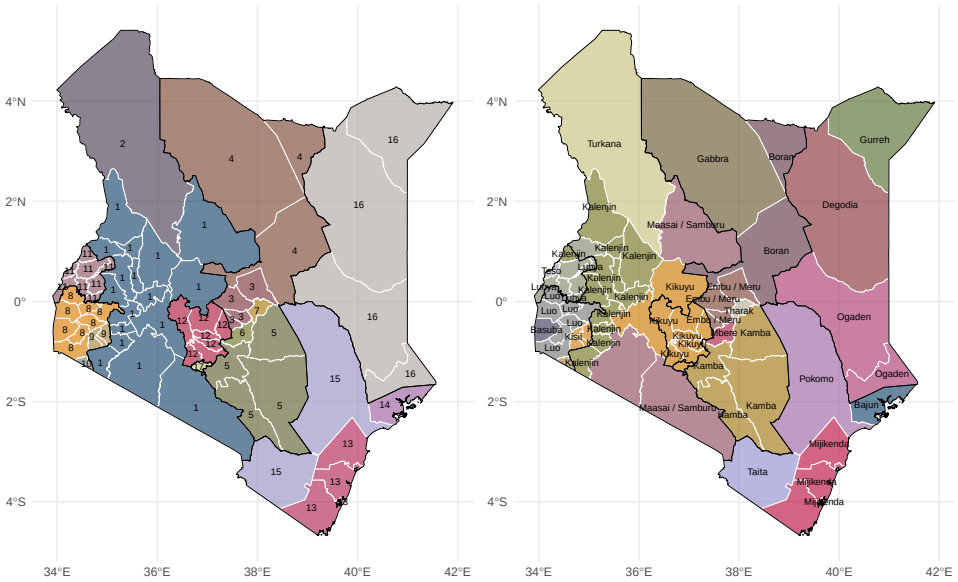
[35]In this case, the population-weighted average of regional fractionalization and the population-weighted average of ethnic fragmentation for each map under consideration.

FIGURE VII
Counterfactual devisions

(A) Bomas draft (14 regions) (B) Wako draft (70 districts)



(C) Optimal design (17 regions) (D) Largest group in districts



Notes: The figure illustrates the counterfactual map divisions. Panel A depicts the divisions as suggested by the Bomas draft, panel B by the Wako draft. Panel C shows the optimal map derived under the assumptions described in the main text. Numbers and colors correspond to the units drawn by the algorithm. White outlines mark the 70 districts existing in 2004/5. Black outlines mark the pre-reform provinces. Panel D depicts the largest ethnic group for each county implied by the 2010 reform.

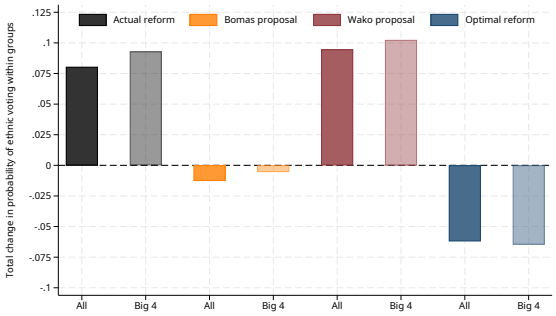
ceteris paribus assumptions, such as constant political competition and voting incentives varying solely along previously estimated treatment effects, this evaluation shows that these proposals likely had very different implications for ethnic politics.

Panel A of Figure VIII shows the counterfactual prediction for the two draft proposals

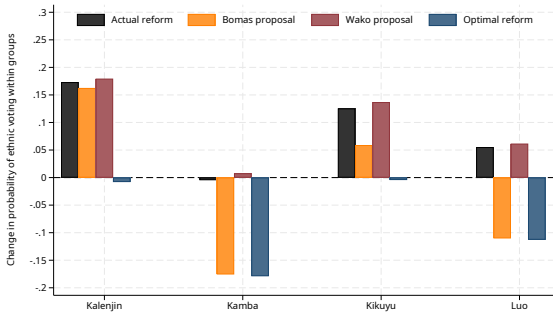
and the optimal map and compares these effects to those of the 2010 constitution. Only the Bomas draft and the optimal reform would have decreased ethnic voting on average. In the case of the Bomas draft, the reduction is about 1.3 percentage points for all groups and 0.5 percentage points for the big four groups relative to the pre-reform situation. Relative to the counties introduced by the 2010 constitution, ethnic voting would decline by about 9.3 percentage points for all groups and 9.8 for the big four groups. The predicted electoral effects of the Wako draft point in the opposite direction. Based on our predictions, the Wako draft would have increased ethnic voting by 9.5 percentage points on average (10.2 for the big four), slightly higher than the 2010 reform. The optimal reform, in turn, is predicted to decrease average ethnic voting by 6.2 (6.5 for the big four) percentage points relative to the pre-reform provinces. Thus, the optimal reform represents a 14.2 percentage point (15.8 for the big four) reduction in ethnic voting relative to the counties implemented in the 2010 constitutional reform.

FIGURE VIII
Predicted effects of counterfactual reforms on ethnic voting

(A) Aggregate estimates



(B) Group-level estimates (big four only)



Notes: Panel A of the figure reports the net (population-weighted) effect of each map on ethnic voting in Kenya. Bars show results for the actual reform, the Bomas draft, the Wako draft, and the optimal reform, both for the total population and for the four ethnic groups with the most political influence (Kikuyu, Kamba, Kalenjin, and Luo). Panel B plots the impact of each reform proposal for each of the big four groups separately.

The optimal map resembles the Bomas draft in some parts but differs in both the number of regions and their design. For example, both maps divide the former Nyanza province in the West where the Luo and the Kisii live very similarly. Moreover, both maps create a Kamba-dominated region in the South of the former Eastern province and a Kikuyu region identical to the former Central province.[36] However, the optimal map creates fewer regions in the former Rift Valley province, where the Bomas draft puts the Kalejin, Maasai/ Samburu, and the Kikuyu in three ethnically mixed regions, but our algorithm groups them together while creating a separate Turkana-dominated region.

[36]Apart from the Kuria-dominated district, which the Bomas draft adds to the Kalenjin-dominated region seven from the former Rift Valley province.

The two maps also differ in the former Cost and Eastern provinces. The Wako draft, on the other hand, is an extreme version of provincialism. It trades large reductions in RF_c for large increases in EF_e. Taken together, these deviations explain the differences in our evaluations of how these different maps would affect ethnic voting in national elections.

Each of these maps also has specific electoral implications across groups. We have already highlighted that the 2010 reform reduced ethnic voting much more for the Kamba than the other four big groups. Panel B of Figure VIII highlights that only the optimal map leads to predicted reductions in ethnic voting for all of the big four groups. However, the predicted impact is very heterogeneous. It is small for the Kikuyu, who tend to concentrate in the former Central province, and the Kalejin, who comprise a large share of the population in the former Rift Valley. The effects of the optimal map and the Bomas draft are largest for the Kamba and Luo, who end up with their own regions in both cases. Even the Bomas draft is predicted to increase ethnic voting for the Kalenjin and the Kikuyu, who are split over more regions than in the optimal map. The Wako draft, in turn, would have increased ethnic voting for all of the big four groups. This broadly matches the patterns of support for the two proposals but also illustrates the constraints imposed by Kenya's ethnic geography. The Wako draft would have introduced many weak regions and reinforced ethnic voting in Kenya—a system that benefited the Kikuyu-led coalition government. The Luo-led multi-ethnic ODM coalition instead backed the Bomas draft, which we predict would have reduced ethnic voting for many groups, albeit unevenly.

8. Conclusion

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 the first evidence of the benefits of ethnofederal reforms on ethnic voting in a quasi-experimental setting. We use generalized difference-in-difference and event study designs in combination with 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 levels, as well as ethnic voting at the respondent-pair level.

The key mechanism behind the ethnicization of national elections is local control of county politics by large groups, an explicit feature of ethnofederal reforms. Our simulations further highlight the potential of such reforms and document that the 2010 constitutional reform in Kenya has been too provincial. This is a worrying finding, given that substantial district proliferation is part of the institutional reforms of many countries

across Africa and Asia.

References

Alesina, A., W. Easterly, and J. Matuszeski (2011). Artificial states. *Journal of the European Economic Association 9*(2), 246–277.

Alesina, A. and E. Spolaore (1997). On the number and size of nations. *Quarterly Journal of Economics 112*(4), 1027–1056.

Alesina, A. and E. Spolaore (2005). *The size of nations*. MIT Press.

Alesina, A. and E. Zhuravskaya (2011). Segregation and the quality of government in a cross section of countries. *American Economic Review 101*(5), 1872–1911.

Amodio, F., G. Chiovelli, and S. Hohmann (2024). The employment effects of ethnic politics. *American Economic Journal: Applied Economics 16*(2), 456–491.

Anderson, D. and E. Lochery (2008). Violence and exodus in Kenya's Rift Valley, 2008: Predictable and preventable? *Journal of Eastern African Studies 2*(2), 328–343.

Asmus, G., R. Bluhm, and T. Korn (2019). The emergency: The long-term effects of British labor camps in Kenya. *Mimeo University of Heidelberg*.

Bandiera, O., M. Mohnen, I. Rasul, and M. Viarengo (2019). Nation-building through compulsory schooling during the age of mass migration. *The Economic Journal 129*(617), 62–109.

Bazzi, S. and M. Gudgeon (2021). The political boundaries of ethnic divisions. *American Economic Journal: Applied Economics 13*(1), 235–266.

BBC Monitoring Africa (2009, September). Kenyan court reduces administrative districts to 46. Accessed March 3, 2024. Available at advance.lexis.com/api/document?collection=news&id=urn:contentItem:7WJC-57R0-Y9M2-Y364-00000-00&context=1516831.

BenYishay, A., R. Rotberg, J. Wells, Z. Lv, S. Goodman, L. Kovacevic, and D. Runfola (2017). Geocoding afrobarometer rounds 1–6: Methodology and data quality. Technical report, AidData.

Bluhm, R., R. Hodler, and S. Paul (2020). Colonial structures, local majorities, and economic development. *Mimeo University of St.Gallen*.

Boffa, F., A. Piolatto, and G. A. M. Ponzetto (2016). Political Centralization and Government Accountability. *Quarterly Journal of Economics 131*(1), 381–422.

Borusyak, K. and X. Jaravel (2017). Revisiting event study designs, with an application to the estimation of the marginal propensity to consume. Mimeo.

Burgess, R., R. Jedwab, E. Miguel, A. Morjaria, and G. Padró i Miquel (2015). The value of democracy: Evidence from road building in Kenya. *American Economic Review 105*(6), 1817–1851.

Cáceres-Delpiano, J., A.-I. De Moragas, G. Facchini, and I. González (2021). Intergroup contact and nation building: Evidence from military service in Spain. *Journal of Public Economics 201*, 104477.

Callaway, B., A. Goodman-Bacon, and P. H. Sant'Anna (2021). Difference-in-differences with a continuous treatment. *arXiv preprint arXiv:2107.02637*.

Callaway, B. and P. H. Sant'Anna (2021). Difference-in-differences with multiple time periods. *Journal of Econometrics 225*(2), 200–230.

Cantoni, D., Y. Chen, D. Y. Yang, N. Yuchtman, and Y. J. Zhang (2017). Curriculum and ideology. *Journal of Political Economy 125*(2), 338–392.

Carlitz, R., A. Morjaria, and J. M. Mueller (2022, December). State-building in a diverse society. Working Paper 30731, National Bureau of Economic Research.

Clots-Figueras, I. and P. Masella (2013). Education, language and identity. *The Economic Journal 123*(570), F332–F357.

Coser, L. A. (1956). *The Functions of Social Conflict*. The Free Press.

Dahl, R. A. (1956). *A Preface to Democratic Theory*. University of Chicago Press.

D'Arcy, M. (2020, 02). Devolution and county government. In *The Oxford Handbook of Kenyan Politics*. Oxford University Press.

D'Arcy, M. and A. Cornell (2016, 03). Devolution and corruption in Kenya: Everyone's turn to eat? *African Affairs 115*(459), 246–273.

De Luca, G., R. Hodler, P. A. Raschky, and M. Valsecchi (2018). Ethnic favoritism: An axiom of politics? *Journal of Development Economics 132*, 115–129.

Depetris-Chauvin, E., R. Durante, and F. Campante (2020). Building nations through shared experiences: Evidence from African football. *American Economic Review 110*(5), 1572–1602.

Desmet, K., I. Ortuño-Ortín, and R. Wacziarg (2017). Culture, ethnicity, and diversity. *American Economic Review 107*(9), 2479–2513.

Dunning, T. and L. Harrison (2010). Cross-cutting cleavages and ethnic voting: An experimental study of cousinage in Mali. *American Political Science Review 104*(1), 21–39.

Eberle, U. J., J. V. Henderson, D. Rohner, and K. Schmidheiny (2020). Ethnolinguistic diversity and urban agglomeration. *Proceedings of the National Academy of Sciences 117*(28), 16250–16257.

Esposito, E., T. Rotesi, A. Saia, and M. Thoenig (2023). Reconciliation narratives: The birth of a nation after the US civil war. *American Economic Review 113*(6), 1461–1504.

Ferree, K. E., C. C. Gibson, and J. D. Long (2014). Voting behavior and electoral irregularities in Kenya's 2013 election. *Journal of Eastern African Studies 8*(1), 153–172.

Fifield, B., M. Higgins, K. Imai, and A. Tarr (2020). Automated redistricting simulation using markov chain monte carlo. *Journal of Computational and Graphical Statistics 29*(4), 715–728.

Florczyk, A. J., C. Corbane, D. Ehrlich, S. Freire, T. Kemper, L. Maffenini, M. Melchiorri, M. Pesaresi, P. Politis, M. Schiavina, F. Sabo, and L. Zanchetta (2019). Ghsl data package 2019, eur 29788 en. Technical report, JRC 117104.

Franck, R. and I. Rainer (2012). Does the leader's ethnicity matter? Ethnic favoritism, education, and health in Sub-Saharan Africa. *American Political Science Review 106*(2), 294–325.

Francois, P., I. Rainer, and F. Trebbi (2014). The dictator's inner circle. *NBER Working Paper No. 20216*.

Gibson, C. C. and J. D. Long (2009). The presidential and parliamentary elections in Kenya, December 2007. *Electoral Studies 28*(3), 497–502.

Hassan, M. (2020, 02). The local politics of resource distribution. In *The Oxford Handbook of Kenyan Politics*. Oxford University Press.

Hodler, R., M. Valsecchi, and A. Vesperoni (2021). Ethnic geography: Measurement and evidence. *Journal of Public Economics 200*, 104446.

Horowitz, D. L. (1985). *Ethnic Groups in Conflict*. University of California Press.

Horowitz, J. (2019). Ethnicity and the swing vote in africa's emerging democracies: Evidence from kenya. *British Journal of Political Science 49*(3), 901–921.

Huber, J. D. (2012). Measuring ethnic voting: Do proportional electoral laws politicize

ethnicity? *American Journal of Political Science 56*(4), 986–1001.

Kramon, E., J. H. Hicks, S. Baird, and E. Miguel (2022). Deepening or diminishing ethnic divides? The impact of urban migration in Kenya. *American Journal of Political Science 66*(2), 365–384.

Kramon, E. and D. N. Posner (2011). Kenya's new constitution. *Journal of Democracy 22*(2), 89–103.

Kramon, E. and D. N. Posner (2016). Ethnic favoritism in education in Kenya. *Quarterly Journal of Political Science 11*(1), 1–58.

Lijphart, A. (1977). *Democracy in Plural Societies: A Comparative Exploration*. Yale University Press.

Lipset, S. M. (1960). *Political Man: The Social Bases of Politics*. Doubleday & Company.

Long, J. D. and C. C. Gibson (2015). Evaluating the roles of ethnicity and performance in African elections: Evidence from an exit poll in Kenya. *Political Research Quarterly 68*(4), 830–842.

Marx, B., V. Pons, and T. Suri (2021). Voter mobilisation and trust in electoral institutions: Evidence from Kenya. *The Economic Journal 131*(638), 2585–2612.

Maxon, R. M. (2016). *The Demise and Rise of Majimbo in Independent Kenya*, pp. 19–48. New York: Palgrave Macmillan US.

Mboga, H. (2009). Understanding the local government system in Kenya: A citizen's handbook. Technical report, Institute of Economic Affairs (IEA).

Michalopoulos, S. and E. Papaioannou (2016). The long-run effects of the scramble for Africa. *American Economic Review 106*(7), 1802–1848.

Miguel, E. (2004). Tribe or nation? Nation building and public goods in Kenya versus Tanzania. *World Politics 56*(3), 327–362.

Mueller, S. D. (2008). The political economy of kenya's crisis. *Journal of Eastern African Studies 2*(2), 185–210.

Mueller, S. D. (2020). High-stakes ethnic politics. In N. Cheeseman, K. Kanyinga, and G. Lynch (Eds.), *Oxford Handbook of Kenyan Politics*, pp. 343–355. Oxford University Press.

National Cohesion and Integration Commission (2016). Towards National Cohesion and Unity in Kenya - Ethnic and Diversity Audit of the County Public Service. Accessed March 4, 2024. Available at https://cohesion.go.ke/images/docs/Ethnic-and-Diversity-Audit-of-the-County-Public-Service-2016.pdf.

Oates, W. (1972). *Fiscal federalism*. Harcourt.

Okunogbe, O. (2024). Does exposure to other ethnic regions promote national integration? evidence from nigeria. *American Economic Journal: Applied Economics 16*(1), 157–192.

Oloo, A. (2020, 02). The weaknesses of political parties. In *The Oxford Handbook of Kenyan Politics*. Oxford University Press.

Oyugi, W. O. and J. O. Ochieng (2020, 02). The politics of the provincial administration. In *The Oxford Handbook of Kenyan Politics*. Oxford University Press.

Padró i Miquel, G. (2007). The control of politicians in divided societies: The politics of fear. *Review of Economic Studies 74*(4), 1259–1274.

Pande, R. (2020). Can democracy work for the poor? *Science 369*(6508), 1188–1192.

Posner, D. N. (2005). *Institutions and ethnic politics in Africa*. Cambridge University Press.

Roeder, P. G. (1991). Soviet federalism and ethnic mobilization. *World Politics 43*(2), 196–232.

Rohner, D. and E. Zhuravskaya (2023). Nation building: What could possibly go wrong? In D. Rohner and E. Zhuravskaya (Eds.), *Nation Building: Big Lessons from Successes and Failures*. CEPR Press.

Rokkan, S. and S. M. Lipset (1967). Cleavage structures, party systems, and voter alignments: An introduction. In S. Rokkan and S. M. Lipset (Eds.), *Party Systems and Voter Alignments: Cross-National Perspectives*, pp. 1–64. Free Press New York.

Selway, J. S. (2011). The measurement of cross-cutting cleavages and other multidimensional cleavage structures. *Political Analysis 19*(1), 48–65.

Spolaore, E. (2010). Federalism, regional redistribution and country stability. In N. Bosch, M. E. Queralt, and A. S. Ollé (Eds.), *The political economy of inter-regional fiscal flows: measurement, determinants and effects on country stability*. Edward Elgar Publishing.

Sun, L. and S. Abraham (2021). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of Econometrics 225*(2), 175–199.

Taylor, M. and D. Rae (1969). An analysis of crosscutting between political cleavages. *Comparative Politics 1*(4), 534–547.

Tiebout, C. M. (1956). A pure theory of local expenditures. *Journal of Political Economy 64*(5), 416–424.

Weingast, B. R. (1995). The economic role of political institutions: Market-preserving federalism and economic development. *Journal of Law, Economics, & Organization 11*(1), 1–31.

World Bank (2008). Cities of hope? Governance, economic, and human challenges of Kenya's five largest cities. Technical report, World Bank.

Wrong, M. (2009). *It's Our Turn to Eat: The Story of a Kenyan Whistleblower*. London: Fourth Estate.

Online Appendix

Content:

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A. Additional information on data

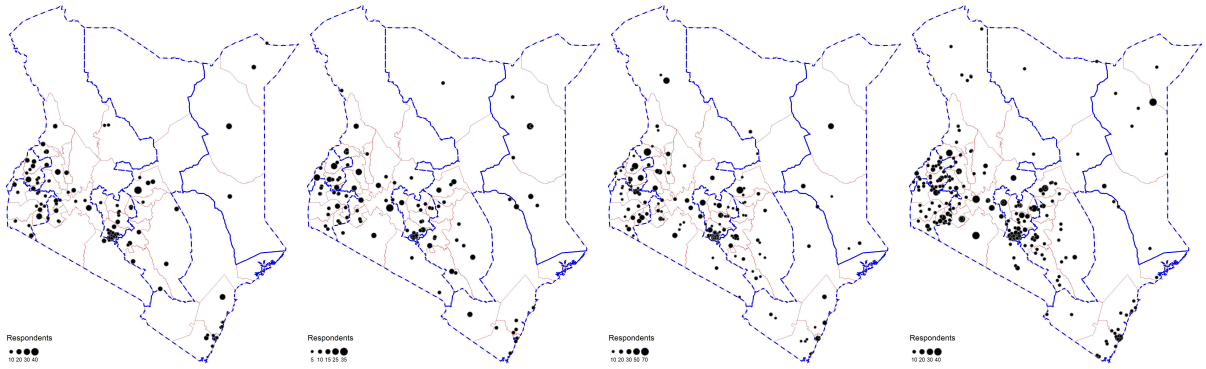
A.1. Data and computation for cross-country comparisons of border designs and border reforms shown in Figure I

TBA.

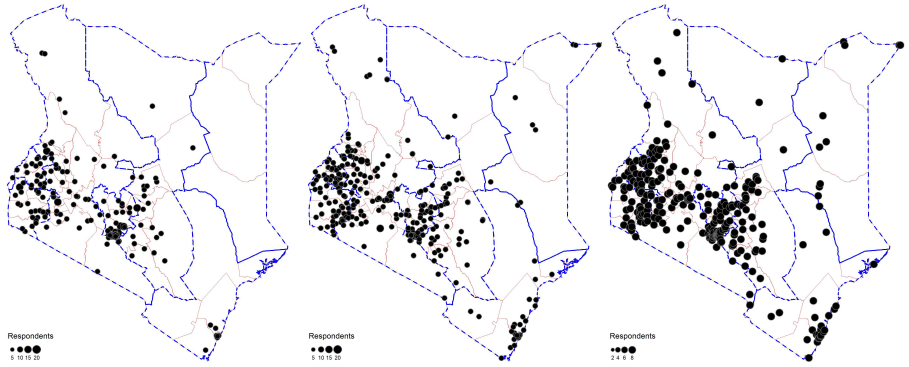
A.2. Spatial coverage of Afrobarometer surveys

FIGURE A.1
Afrobarometer coverage

(A) Round 3 (2005) (B) Round 4 (2008) (C) Round 5 (2011) (D) Round 6 (2014)



(E) Round 7 (2016) (F) Round 8 (2019) (G) Round 9 (2021)



Notes: Panels A–G show the location of Afrobarometer survey clusters in the different survey rounds. The size of the dots is 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.3. Definition of variables

A.3.1. Variables used in the main paper (Tables I, III, and IV)

Ethnic voting (plurality party) is an indicator variable equal to one if respondents i from group e would vote for the party that receives the most votes of other members of groups e during survey round t. The vote shares are constructed from the voting intention question in the Afrobarometer. *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic voting (plurality coalition) is an indicator variable equal to one if respondents i from group e would vote for the coalition that receives the most votes of other members of groups e during survey round t. The vote shares are constructed from the voting intention question in the Afrobarometer matched to the known coalitions at the time of the survey (see Table A.3). *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Change in regional fractionalization ΔRF_c measures the change in regional fractionalization resulting from the administrative-territorial reform where respondents i resides. *(Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics).*

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

Age is the age in years of respondent i. *(Source: Q1 in Afrobarometer rounds 3–9).*

Urban is an indicator variable equal to one if respondent i resides in an Afrobarometer survey cluster designated as urban. *(Source: "urbrur" in Afrobarometer rounds 3–9).*

Female is an indicator variable equal to one if respondent i identifies as female. *(Source: "currint" in Afrobarometer round 3, "thisint" in Afrobarometer rounds 4–9).*

Radio is an indicator variable equal to one if respondent i lives 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, Q92a in round 8, and Q90a in round 9).*

TV is an indicator variable equal to one if respondent i lives 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, Q92b in round 8, and Q90b round in round 9).*

Motorized vehicle is an indicator variable equal to if respondent i lives 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, Q92c in round 8, and Q90c in round 9.)

ΔRF_c **(Constituencies)** measures the change in regional fractionalization resulting from the reform-induced changes (splits) in the electoral constituencies experienced at the location where respondent i resides. *(Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics).*

ΔEF_e **(Constituencies)** measures the change in ethnic fragmentation resulting from the reform-induced changes (splits) in the electoral constituencies experienced at the location where respondent i resides. *(Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics).*

ΔRF_c **(Local authorities)** measures the change in regional fractionalization resulting from the change from pre-reform local authorities, which were abolished, to post-reform counties experienced at the location where respondent i resides. *(Source: Own computation based on microdata from the 1989 census; Kenya National Bureau of Statistics).*

ΔEF_e **(Local authorities)** measures the change in ethnic fragmentation resulting from the change from pre-reform local authorities, which were abolished, to post-reform counties experienced at the location where respondent i resides. *(Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics).*

ΔRF_c **(Districts)** measures the change in regional fractionalization resulting from the change from pre-reform districts to post-reform counties experienced at the location where respondent i resides. *(Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics).*

ΔEF_e **(Districts)** measures the change in ethnic fragmentation resulting from the change from pre-reform districts to post-reform counties experienced at the location where respondent i resides. *(Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics).*

Δ **Unit population** is the percentage change in the population size of the political region where respondent i resides, resulting from the change from pre-reform provinces to post-reform counties. *(Source: Own computation based on microdata from the 1989 census; Kenya National Bureau of Statistics).*

Δ **Capital proximity** is the county-averaged percentage change in the distance between the cluster locations of respondents residing in county c and the subnational capital city in the corresponding province/county, resulting from the creation of 39 new subnational capital cities. *(Own calculation.)*

Support referendum is the vote share in favor of the new constitution in the pre-reform province in which respondent i resides. *(Source: African election database.)*

Largest group is an indicator variable equal to one if respondent i identifies with the largest ethnic group in the county in which they reside. *(Source: Own computation based on micro data from the 1989 census; Kenya National Bureau of Statistics))*

Coethnic governor is an indicator variable equal to one if respondent i identifies with the same ethnic group as the governor of the county in which they reside. *(Source:))*

County executive committee (CEC) share is the share of CEC members in county c who identify with the same ethnic group as respondent i residing in count c. *(Source: Ethnic and Diversity Audit of the County Public Service (National Cohesion and Integration Commission, 2016).)*

County public sector board (CPSB) share is the share of CPSB members in county c who identify with the same ethnic group as respondent i residing in count c. *(Source: Ethnic and Diversity Audit of the County Public Service (National Cohesion and Integration Commission, 2016).)*

CEC & CSPB share is the sum of CEC share and CPSB share. *(Source: Own computation.)*

A.3.2. Variables used in the additional results (Online Appendix B)

Intention to vote is an indicator variable that is equal to one unless the respondent answers "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, Q97 in round 4, and Q96 in round 9).*

Willingness to state party preference is an indicator variable that is equal to one unless the respondent answers "would not vote", "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. *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic voting (majority party) is an indicator variable that is equal to one if respondent of i from group e would vote for the party that receives the majority of votes of other members of groups e during survey round t. The vote shares are constructed from the voting intention question in the Afrobarometer. *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic voting (majority coalition) is an indicator variable that is equal to one if respondent of i from group e would vote for the coalition that receives the majority of votes of other members of groups e during survey round t. The vote shares are constructed

from the voting intention question in the Afrobarometer matched to the known coalitions at the time of the survey (see Table A.3). *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic voting (vote share party) is the share of co-ethnics that vote for the same party as respondent i. The vote shares are constructed from the voting intention question in the Afrobarometer. *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic voting (vote share coalition) is the share of co-ethnics that vote for the same coalition as respondent i. The vote shares are constructed from the voting intention question in the Afrobarometer matched to the known coalitions at the time of the survey (see Table A.3). *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic voting (coethnic candidate party) is an indicator variable that is equal to one if respondent i 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) based on the ethnic identity of the presidential and vice-presidential candidates. *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic voting (coethnic candidate coalition) is an indicator variable that is equal to one if respondent i would vote for the coalition that runs their coethnic candidates if presidential elections were held tomorrow. The vote shares are constructed from the voting intention question in the Afrobarometer matched to the known coalitions at the time of the survey (see Table A.3). The coethnic coalitions are only defined for the big 4 (Kamba, Kalenjin, Kikuyu, and Luo) based on the ethnic identity of the presidential and vice-presidential candidates. *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic voting (Over-representation party) is an indicator variable that is equal to one if respondent i would vote for the party in which their coethnics e are most over-represented following Amodio et al. (2024). The vote shares are constructed from the voting intention question in the Afrobarometer. *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic voting (Over-representation coalition) is an indicator variable that is equal to one if respondent i would vote for the coalition in which their coethnics e are most over-represented following Amodio et al. (2024). The vote shares are constructed from the voting intention question in the Afrobarometer matched to the known coalitions at the time of the survey (see Table A.3). *(Source: Q99 in Afrobarometer rounds 3 and 5–8, Q97 in round 4, and Q96 in round 9).*

Ethnic match (interviewer) is an indicator variable taking unity if the home language of the respondent and the interviewer match and zero otherwise. *(Source home language interviewer, home language as stated above Q114 in Afrobarometer round 3, Q117 in round 4, Q116 in round 5, 6, 7, 8, and 9.)*

National identification (weak) is an indicator variable equal to one if respondent i identifies equally or more with Kenya than their ethnic group. *(Source: Afrobarometer self-identification question: Q82 in Afrobarometer round 3, Q83 in round 4, Q85b in round 5, Q88b in round 6, Q85b in round 7, Q82b in round 8, and Q84c in round 9.)*

National identification (strong) is an indicator variables equal to one if respondent i identifies strictly more with Kenya than their ethnic group. *(Source: Afrobarometer self-identification question: Q82 in Afrobarometer round 3, Q83 in round 4, Q85b in round 5, Q88b in round 6, Q85b in round 7, Q82b in round 8, and Q84c in round 9.)*

Indicator: Ethnic discrimination indicates that a respondent feels more ethnically discriminated by the government than the average respondent from his or her groups in a survey round. *(Source: Afrobarometer self-identification question: Q81 in Afrobarometer round 3, Q82 in round 4, Q85a in round 5, Q88a in round 6, Q85a in round 7, Q82a in round 8, and Q84b in round 9.)*

A.4. Summary statistics

TABLE A.1
Summary statistics

Variable	Mean	SD	Min	Max	N
Respondent id	5,194.60	2,991.72	1.00	10,357.00	10,222
Afrobarometer wave	6.78	1.88	3.00	9.00	10,222
Ethnic vote (party plurality)	0.72	0.45	0.00	1.00	7,225
Ethnic vote (coalition plurality)	0.76	0.43	0.00	1.00	7,225
Ethnic vote (party majority)	0.77	0.42	0.00	1.00	6,088
Ethnic vote (coalition majority)	0.77	0.42	0.00	1.00	6,803
Voteshare coethnics party	0.60	0.30	0.00	1.00	7,225
Voteshare coethnics coalition	0.66	0.28	0.00	1.00	7,195
Ethnic vote (party Amodio et al.)	0.33	0.47	0.00	1.00	7,225
Ethnic vote (party Amodio et al.)	0.63	0.48	0.00	1.00	7,225
Vote for party (coethnic P/VP)	0.55	0.50	0.00	1.00	5,704
Vote for coalition (coethnic P/VP)	0.60	0.49	0.00	1.00	5,704
Voteshare coethnics coalition (E-1)	0.76	0.43	0.00	1.00	7,225
Voteshare coethnics coalition (E+1)	0.82	0.39	0.00	1.00	7,225
Indicator: intends to vote	0.92	0.27	0.00	1.00	10,222
Indicator: Discloses party choice	0.97	0.17	0.00	1.00	10,222
ΔRF_c	-0.20	0.25	-0.61	0.28	10,222
ΔEF_e	0.45	0.16	0.04	0.79	10,222
$\Delta RF_c \times D_t$	-0.15	0.23	-0.61	0.28	10,222
$\Delta EF_e \times D_t$	0.34	0.24	0.00	0.79	10,222
Age	36.12	14.01	18.00	112.00	10,192
Indicator: Respondent is female	0.50	0.50	0.00	1.00	10,222
Indicator: Urban cluster	0.38	0.49	0.00	1.00	10,222
Indicator: Respondent owns a radio	0.85	0.36	0.00	1.00	10,222
Indicator: Respondent owns a TV	0.51	0.50	0.00	1.00	10,222
Indicator: Respondent owns a vehicle	0.24	0.43	0.00	1.00	10,222
Δ RF - districts to county	0.02	0.13	-0.35	0.46	9,715
Δ EF - districts to county	-0.14	0.08	-0.38	0.01	9,715
Δ RF - local authorities to county	0.01	0.13	-0.43	0.51	9,707
Δ EF - local authorities to county	-0.11	0.07	-0.27	0.02	9,707
Δ RF - electoral constituencies	0.00	0.08	-0.49	0.42	9,542
Δ EF - electoral constituencies	0.01	0.03	0.00	0.35	9,542
Δ *Adm. unitsize*(*pop*)	-0.71	0.28	-0.98	0.00	10,222
Δ *Capital proximity*	-0.46	0.34	-0.94	0.00	10,222
Indicator: Support referendum	0.55	0.50	0.00	1.00	10,222
Δ Ethnic strat. in regions	-0.40	0.53	-1.60	0.88	10,222
Δ Regional strat. in ethnic groups	0.77	0.24	0.15	1.33	9,796
ΔRF_e (ethnic families)	0.19	0.25	-0.41	0.61	10,222
ΔEF_e (ethnic families)	-0.36	0.20	-0.79	-0.04	10,222
Δ Ethnic strat. in regions	-0.40	0.53	-1.60	0.88	10,222
Δ Regional strat. in ethnic groups	0.77	0.24	0.15	1.33	9,796
Indicator: Ethnic match respondent interviewer	0.79	0.41	0.00	1.00	10,222
Population share county (e)	0.61	0.37	0.00	0.99	10,222

Continued on next page

Table A.1 – *Continued from previous page*

Variable	Mean	SD	Min	Max	N
Indicator: Largest group in county	0.72	0.45	0.00	1.00	10,222
Staff share public admin county	0.58	0.33	-0.00	1.00	10,222
Staff share public admin county, incl. new hires	0.59	0.33	0.00	0.97	10,222
Indicator: Gubernatorial MoV > 10pp	0.32	0.47	0.00	1.00	10,222
Big 4	0.56	0.50	0.00	1.00	10,222
Indicator: Identification state ≥ tribe	0.90	0.30	0.00	1.00	10,222
Indicator: Identification state > tribe	0.45	0.50	0.00	1.00	10,222

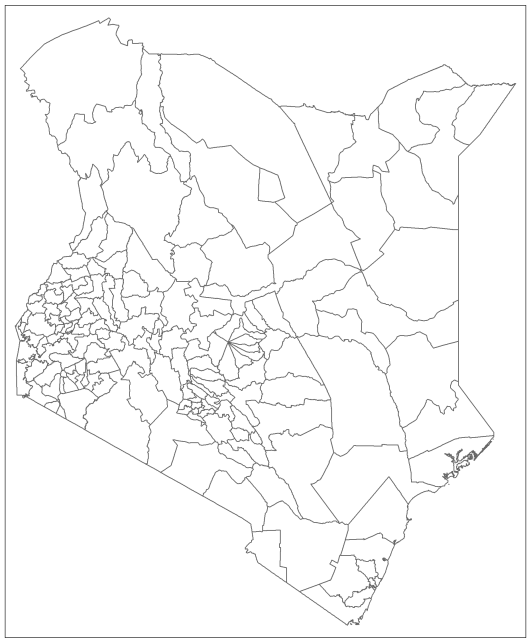
A.5. Additional border changes in Kenya

We collect data on the additional border changes and identify the appropriate counterfactual. In two cases, this is straightforward. The Independent Electoral and Boundaries Commission (IEBC) publishes constituency borders for Kenya for each election. The pre-and post-reform constituency borders 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 borders that were in effect from 1963 until 2010 as the pre-reform baseline (Mboga, 2009), and the borders of the 47 counties as the post-reform geographies (as they completely replaced the lower and less-well funded layer). We could not identify geometries for all 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).[1] 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 borders are those of the 47 counties. Constituencies were split while local authorities and districts were merged into counties as part of the reform process.

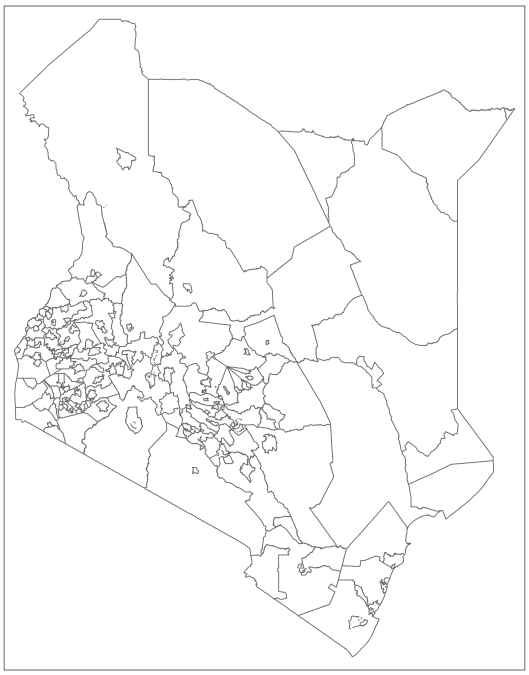
[1]Kenya; All Constituencies Now Turned Into Districts. Africa News, July 13, 2009 Monday. advance.lexis.com/api/document?collection=news&id=urn:contentItem:7W4Y-7370-Y9KG-Y1KK-00000-00&context=1516831.

FIGURE A.2
Other political borders affected by the reform

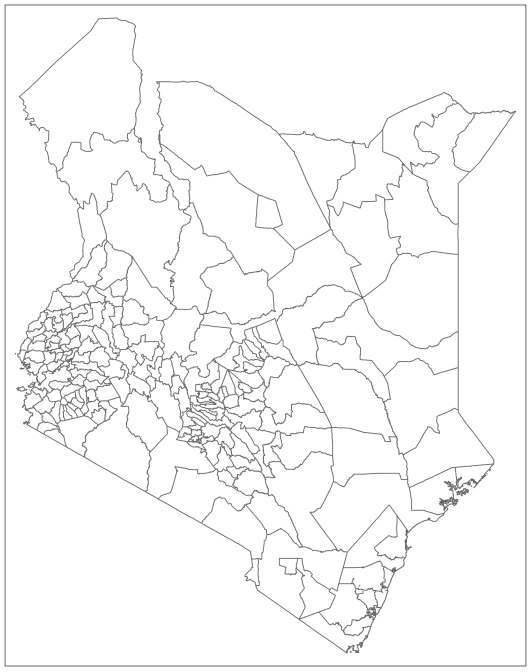
(A) Districts



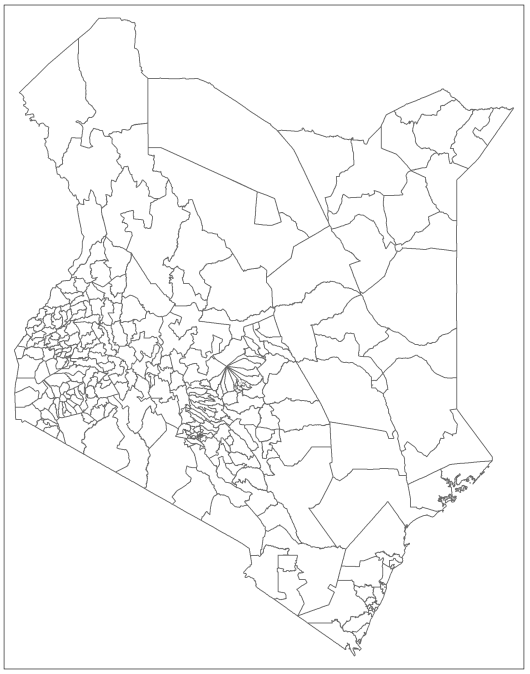
(B) Local Authorities



(C) Constituencies (pre-reform)



(D) Constituencies (post-reform)

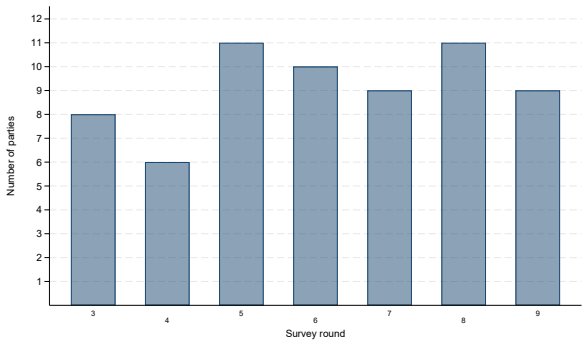


Notes: Panel A depicts the districts of Kenya as of 2008. They where abolished with the constitutional reform. Panel B depicts the local authorities prior to the reform. Panel C depicts the pre-reform electoral constituencies, and panel D post-reform ones.

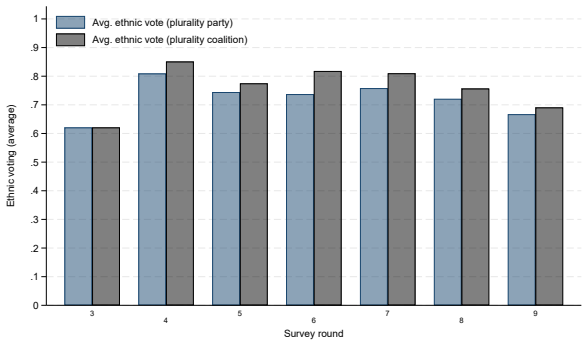
A.6. Further descriptive statistics

FIGURE A.3
Number of parties and average ethnic voting

(A) No. of parties



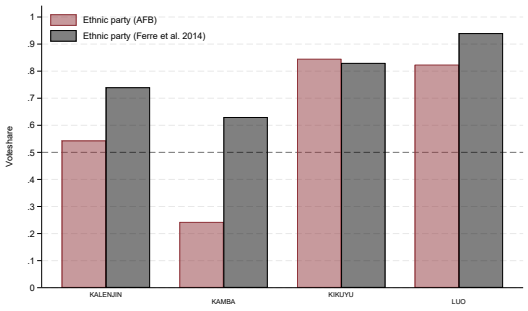
(B) Avg. ethnic voting



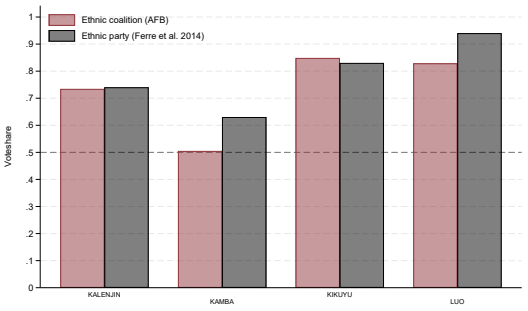
Notes: Panel A of the figure plots the number of parties stated as voting choices by respondents in the Afrobarometer survey during each survey round. Panel B of the figure plots average ethnic voting (plurality party in blue, plurality coalition in black) over the survey rounds.

FIGURE A.4
Similarity of ethnic party voting in Afrobarometer and exit polls

(A) Parties

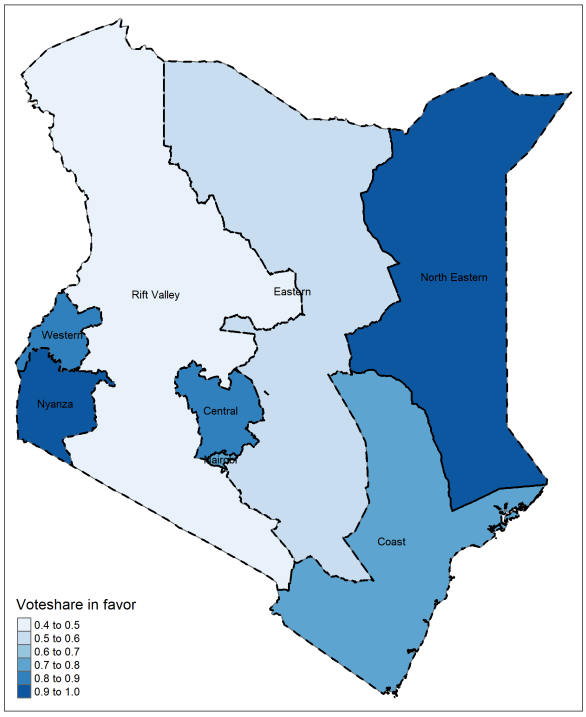


(B) Coalitions



Notes: Panel A of the figure 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 maroon) 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 grey). 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. The Afrobarometer voteshare is based on wave 6 (2014), which is closest to the exit polls in Ferree et al. (2014) conducted in 2013.

FIGURE A.5
2010 Referendum support for the constitutional reform across provinces



Notes: The figure plots the vote share in favor of the constitutional reform during the 2010 referendum across provinces.

TABLE A.2
Most popular parties by group and survey round

Ethnic group	Survey round	Resp. party	Most popular party	Vote share 1st party	Second most popular party	Vote share 2nd party
EMBU / MERU	3	30	NARC-K	.85	KANU	.07
EMBU / MERU	4	37	PNU	.46	ODM	.36
EMBU / MERU	5	67	PNU	.52	ODM	.4
EMBU / MERU	6	111	TNA	.9	ODM	.04
EMBU / MERU	7	90	JAP	.9	TNA	.06
EMBU / MERU	8	145	JAP	.85	ODM	.12
EMBU / MERU	9	151	UDA	.7	ODM	.17
KALENJIN	3	104	KANU	.52	NARC-K	.26
KALENJIN	4	41	ODM	.97	PNU	.03
KALENJIN	5	105	UDM	.44	ODM	.29
KALENJIN	6	173	URP	.62	TNA	.22
KALENJIN	7	167	JAP	.81	URP	.09
KALENJIN	8	355	JAP	.88	ODM	.06
KALENJIN	9	294	UDA	.84	JAP	.09
KAMBA	3	109	NARC-K	.66	LDP	.22
KAMBA	4	66	ODM	.71	PNU	.22
KAMBA	5	150	ODM	.73	PNU	.19
KAMBA	6	202	ODM	.36	WDM-K	.33
KAMBA	7	142	JAP	.44	ODM	.33
KAMBA	8	239	JAP	.43	ODM	.27
KAMBA	9	254	UDA	.39	WDM-K	.28
KIKUYU	3	153	NARC-K	.7	KANU	.17
KIKUYU	4	141	PNU	.65	ODM	.22
KIKUYU	5	249	PNU	.74	KANU	.09
KIKUYU	6	343	TNA	.96	ODM	.02
KIKUYU	7	229	JAP	.92	TNA	.05
KIKUYU	8	410	JAP	.93	ODM	.04
KIKUYU	9	444	UDA	.7	JAP	.15
KISII	3	88	NARC-K	.49	KANU	.19
KISII	4	38	ODM	.86	PNU	.14
KISII	5	68	ODM	.67	PNU	.28
KISII	6	121	ODM	.58	TNA	.36
KISII	7	93	JAP	.55	ODM	.42
KISII	8	160	ODM	.53	JAP	.44
KISII	9	142	ODM	.59	UDA	.29
LUHYA	3	105	NARC-K	.48	LDP	.26
LUHYA	4	62	ODM	.91	KADDU-ASIL	.04
LUHYA	5	192	ODM	.84	PNU	.1
LUHYA	6	256	ODM	.65	TNA	.22
LUHYA	7	198	ODM	.54	JAP	.39
LUHYA	8	349	ODM	.44	JAP	.38
LUHYA	9	387	ODM	.55	UDA	.26
LUO	3	118	LDP	.81	NARC-K	.15
LUO	4	97	ODM	1		0
LUO	5	207	ODM	.96	NARC-K	.02
LUO	6	210	ODM	.93	TNA	.07
LUO	7	170	ODM	.93	JAP	.05
LUO	8	283	ODM	.88	JAP	.1
LUO	9	249	ODM	.92	UDA	.06
MAASAI / SAMBURU	3	15	NARC-K	.46	KANU	.38

Continued on next page

Table A.2 – *Continued from previous page*

Ethnic group	Wave	Resp. party	Most popular party	Vote share 1st party	Second most popular party	Vote share 2nd party
MAASAI / SAMBURU	4	9	ODM	.57	PNU	.29
MAASAI / SAMBURU	5	28	ODM	.82	KANU	.05
MAASAI / SAMBURU	6	26	TNA	.6	ODM	.25
MAASAI / SAMBURU	7	43	JAP	.61	ODM	.22
MAASAI / SAMBURU	8	72	JAP	.55	ODM	.45
MAASAI / SAMBURU	9	50	ODM	.48	UDA	.39
MIJIKENDA	3	72	NARC-K	.51	KANU	.21
MIJIKENDA	4	17	ODM	.83	PNU	.17
MIJIKENDA	5	78	ODM	.59	PNU	.29
MIJIKENDA	6	88	ODM	.76	TNA	.18
MIJIKENDA	7	23	ODM	.56	JAP	.31
MIJIKENDA	8	107	ODM	.59	JAP	.41
MIJIKENDA	9	136	ODM	.62	UDA	.22
SOMALI	3	12	KANU	.5	NARC-K	.3
SOMALI	4	51	ODM	.82	PNU	.15
SOMALI	5	90	ODM	.65	PNU	.29
SOMALI	6	100	TNA	.57	ODM	.27
SOMALI	7	8	JAP	.8	ODM	.2
SOMALI	8	82	JAP	.71	ODM	.2
SOMALI	9	91	UDA	.4	ODM	.32

TABLE A.3
Match parties coalitions over survey rounds

Survey round	Party	Coalition	Coalition past election	Coalition next election	Resp.
3	DP	.	NARC	PNU	12
3	FORD-K	.	NARC	PNU	18
3	KANU	.	KANU	PNU	128
3	LDP	ODM	NARC	.	150
3	NARC-K	NARC-K	NARC-K	PNU	317
3	NPK	.	NARC	.	3
3	Shirikisho	.			4
3	SDP	.	SDP	SDP	1
4	FORD-K	PNU	PNU	CORD	1
4	KADDU-ASIL	.	KADDU-ASIL	.	2
4	KANU	PNU	PNU	Amani	8
4	NARC-K	PNU	PNU	NARC-K	14
4	ODM	ODM	ODM	CORD	270
4	ODM-K	.			42
4	PNU	PNU	PNU	Jubilee (JAP)	107
5	DP	.	PNU	.	2
5	FORD-K	.	PNU	CORD	2
5	G7	.	.	.	3
5	KADDU-ASIL	.	KADDU-ASIL	.	1
5	KANU	.	PNU	Amani	27
5	NARC-K	.	PNU	NARC-K	37
5	NFK	.	NFK	Amani	3
5	ODM	ODM	ODM	CORD	477
5	ODM-K	.			72
5	PNU	PNU	PNU	Jubilee (JAP)	244
5	SAFINA	.	.	SAFINA	1
5	UDM	ODM	ODM	CORD	41
6	FORD-K	CORD	CORD	NASA	8
6	KSC	CORD	CORD	.	3
6	NARC-K	.	NARC-K	NARC-K	10
6	ODM	CORD	CORD	NASA	503
6	RBK	.	RBK	.	2
6	SAFINA	.	SAFINA	.	2
6	TNA	Jubilee (JAP)	Jubilee (JAP)	Jubilee (JAP)	599
6	UDF	.	Amani	Jubilee (JAP)	13
6	URP	Jubilee (JAP)	Jubilee (JAP)	Jubilee (JAP)	125
6	WDM-K	CORD	CORD	NASA	53
7	JAP	Jubilee (JAP)	Jubilee (JAP)	Jubilee (JAP)	529
7	NARC-K	.	NARC-K	.	3
7	ODM	CORD	CORD	NASA	295
7	RBK	.	RBK	.	2
7	SAFINA	.	SAFINA	.	1
7	TNA	Jubilee (JAP)	Jubilee (JAP)	Jubilee (JAP)	27
7	UDF	Jubilee (JAP)	Amani	Jubilee (JAP)	4
7	URP	Jubilee (JAP)	Jubilee (JAP)	Jubilee (JAP)	13
7	WDM-K	CORD	CORD	NASA	22
8	Amani National Congress	NASA	NASA	KK	28
8	FORD-K	NASA	NASA	KK	15
8	JAP	Jubilee (JAP)	Jubilee (JAP)	Azimio	951
8	KANU	.	KANU	Azimio	13
8	KSC	.	.	.	1

Continued on next page

Table A.3 – *Continued from previous page*

Survey round	Party	Coalition	Coalition past election	Coalition next election	Resp.
8	Maendeleo Chap Chap	Jubilee (JAP)	Jubilee (JAP)	KK	9
8	NARC-K	.	.	.	5
8	ODM	NASA	NASA	Azimio	548
8	Thirdway Alliance	.	Thirdway Alliance	Thirdway Alliance	14
8	UDF	Jubilee (JAP)	Jubilee (JAP)	Jubilee (JAP)	2
8	WDM-K	NASA	NASA	Azimio	41
9	Amani National Congress	NASA	NASA	KK	27
9	JAP	.	Jubilee (JAP)	Azimio	161
9	KANU	.	KANU	Azimio	6
9	KSC	.	.	.	1
9	Maendeleo Chap Chap	.	Jubilee (JAP)	KK	2
9	NARC-K	.	.	.	4
9	ODM	NASA	NASA	Azimio	563
9	UDA	UDA	UDA	KK	691
9	WDM-K	NASA	NASA	Azimio	34

TABLE A.4
Correlation of treatments

Panel A: ΔRF_c				
	ΔRF_c: County vs.			
	Provinces	Districts	LA	EC
Δ RF_c	1			
Δ RF_c (Districts in 2008)	0.164	1		
Δ RF_c (Local authorities)	0.0957	0.657	1	
Δ RF_c (Electoral constituencies)	0.0481	0.0507	-0.0226	1
Panel B: ΔEF_e				
	ΔEF_e: County vs.			
	Provinces	Districts	LA	EC
Δ EF_e	1			
Δ EF_e (Districts in 2008)	0.114	1		
Δ EF_e (Local authorities) 0.0676	0.854	1		
Δ EF_e (Electoral constituencies) -0.121	-0.446	-0.0981	1	

Notes: The table reports the correlations between our two main empirical measures ΔRF and ΔEF constructed from the border changes from provinces to counties, and our alternative boundary changes employed in Section 5.3. Specifically, the ΔRF and ΔEF constructed from the 2008 districts to counties, the local authorities to counties, and the electoral constituencies to counties.

TABLE A.5
Correlation of treatment with administrative unit size

	ΔRF_c	ΔEF_c	Δ adm. unit size		
			population	area	pop. density
Δ RF_c	1				
Δ EF_e	-0.258	1			
Δ adm. unit size (pop)	0.421	-0.299	1		
Δ adm. unit size (area)	0.426	-0.324	0.950	1	
Δ adm. unit size (pop density)	0.009	0.189	-0.125	-0.222	1

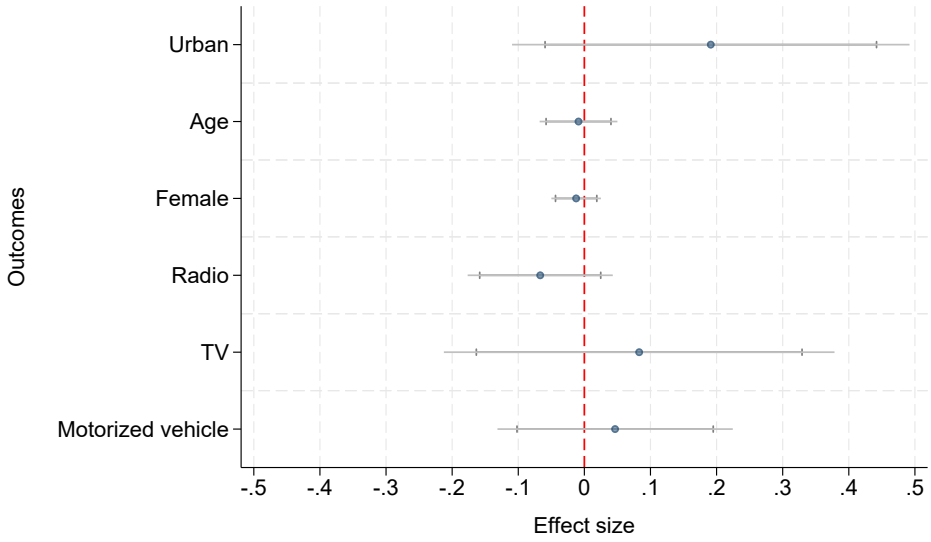
Notes: The table reports the correlations between our two main empirical measures ΔRF and ΔEF and several proxies for the size change of administrative units.

B. Additional results

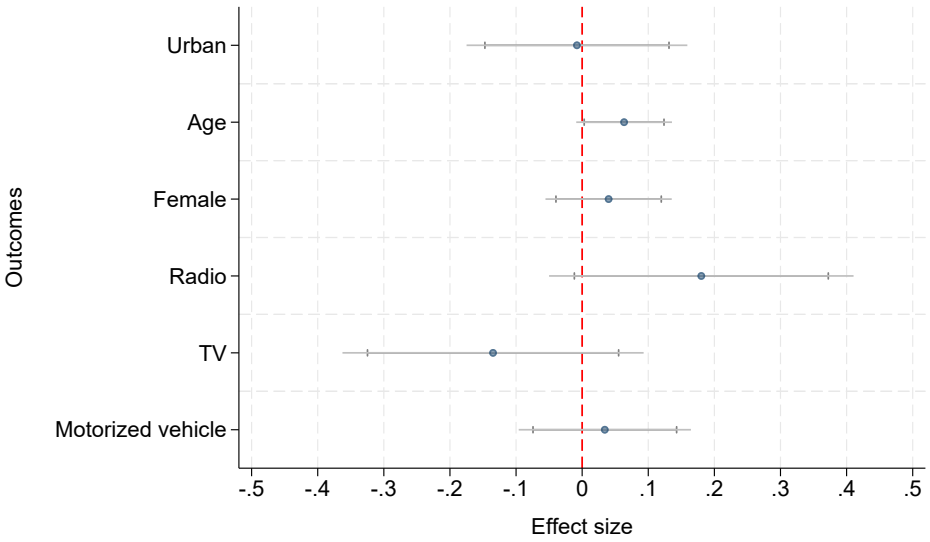
B.1. Figures

FIGURE B-1
Balancing results

(A) Changes in regional fractionalization (ΔRF_c)



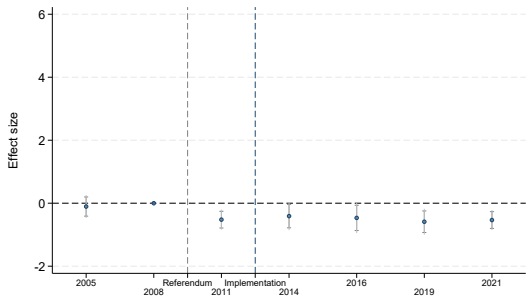
(B) Changes in ethnic fragmentation (ΔEF_e)



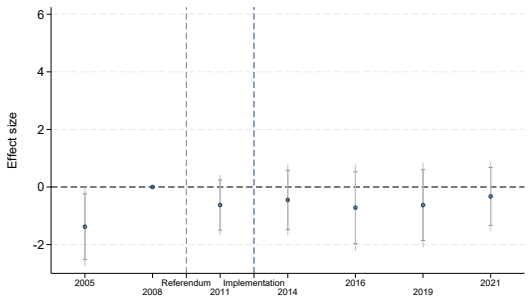
Notes: The figure summarizes the balancing tests on individual characteristics with respect to our treatments. Panels (A) and (B) report the point estimates and 95% confidence intervals of a change in regional fractionalization and ethnic fragmentation over different individual controls. The 95% confidence intervals based on two-way clustered standard errors at the county and province-by-ethnicity level are plotted as gray error bars.

FIGURE B-2
Effect symmetry

(A) Decreasing regional fractionalization



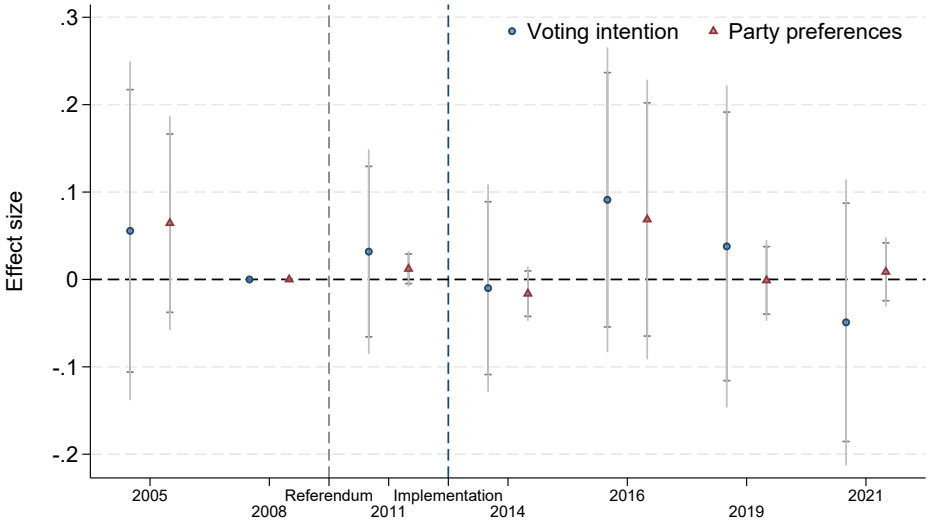
(B) Increasing regional fractionalization



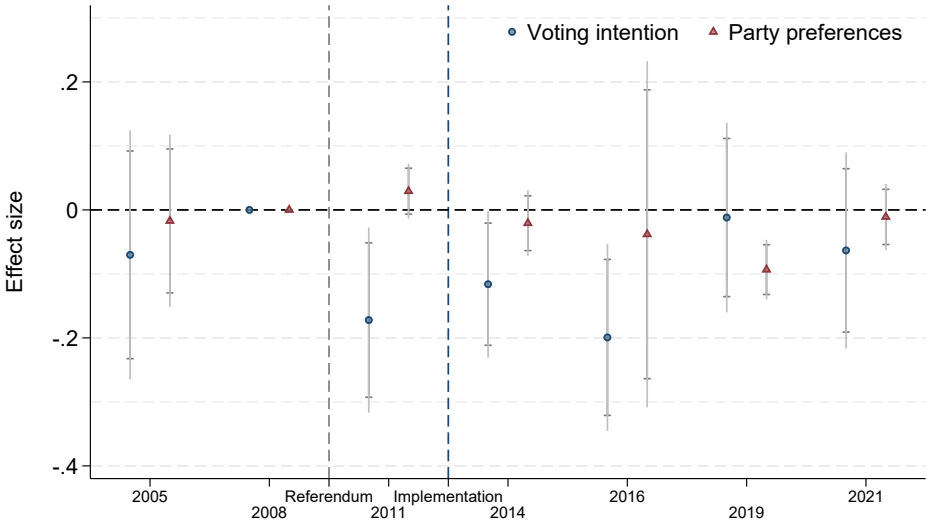
Notes: The figure shows event study coefficients of the effect of reform-induced changes in regional fractionalization on ethnic voting split by whether regional fractionalization increases or decreases, thereby controlling for changes in ethnic fragmentation. Panel A shows estimates for reductions in regional fractionalization, and panel B shows estimates for increases in regional fractionalization. Note that the negative ΔRF_c values in panel A are multiplied by -1 to report the effect of reductions in regional fractionalization. Not that ethnic fragmentation increases for all groups which is why we do not show its effect. All specifications control for changes in ethnic fragmentation and include county-by-ethnicity and time fixed effects. 95% confidence intervals based on two-way clustered standard errors at the province-by-ethnicity and county level are plotted as gray error bars.

FIGURE B-3
Intention to vote and willingness to reveal party preferences

(A) Effects of changes in regional fractionalization



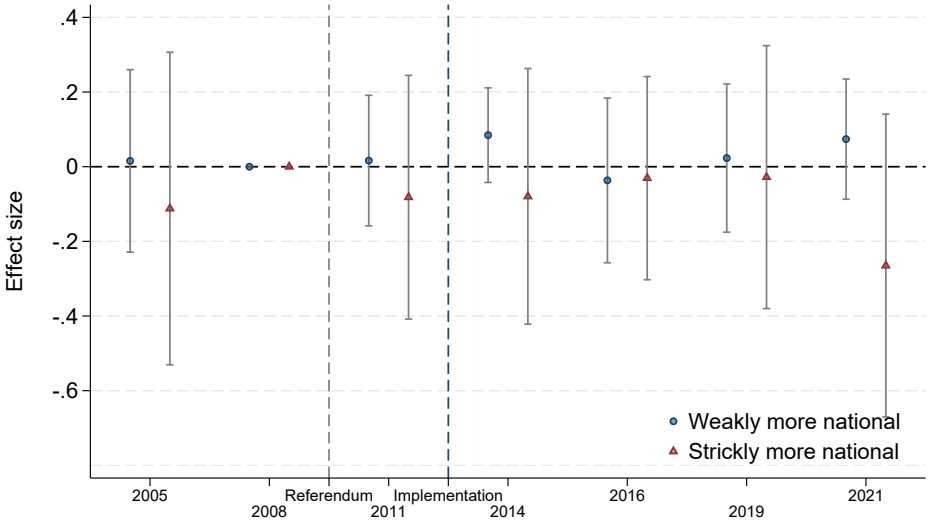
(B) Effects of changes in ethnic fragmentation



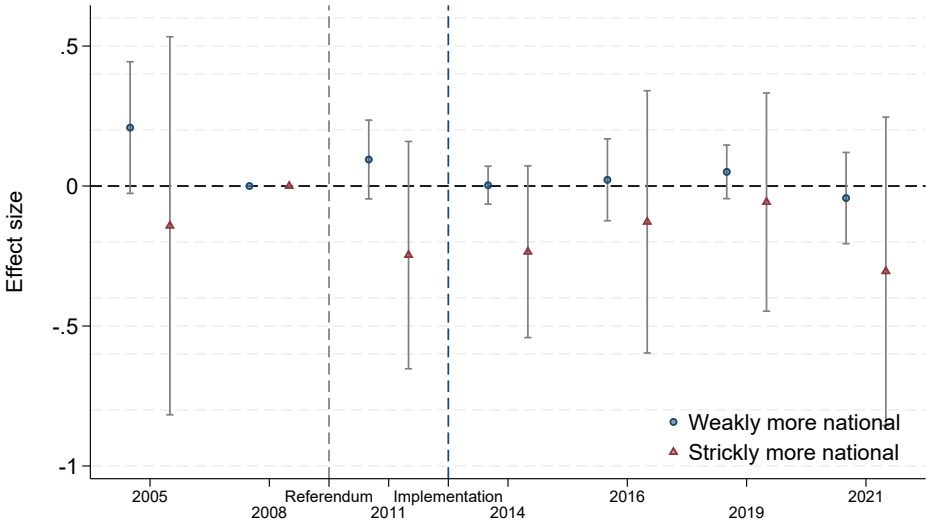
Notes: The figure shows event study coefficients of reform-induced changes in regional fractionalization and ethnic fragmentation on whether a respondent indicates an intention to vote (circles) and whether they are willing to reveal the party's candidate they intend to vote for (triangles). The event study specifications include county-by-ethnicity and time-fixed effects as well as the following individual-level control variables: Age and indicator variables for residence in an urban cluster, being female, owning a radio, TV, and motorized vehicle. 95% confidence intervals based on standard errors clustered at the province-by-ethnicity and county level are plotted as gray error bars.

FIGURE B-4
Self-identification: Nation vs. ethnic group

(A) Effect of changes in regional fractionalization on self-identification



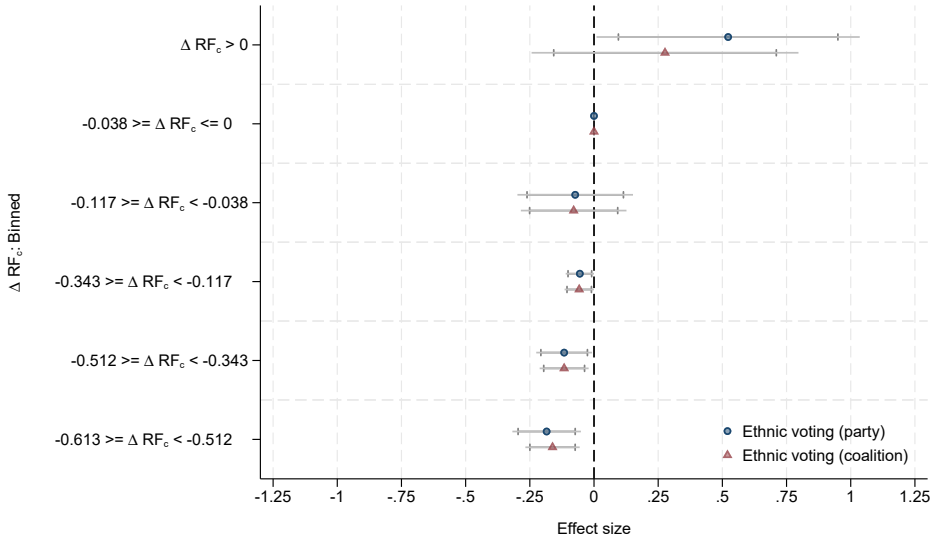
(B) Effect of changes in ethnic fragmentation on self-identification



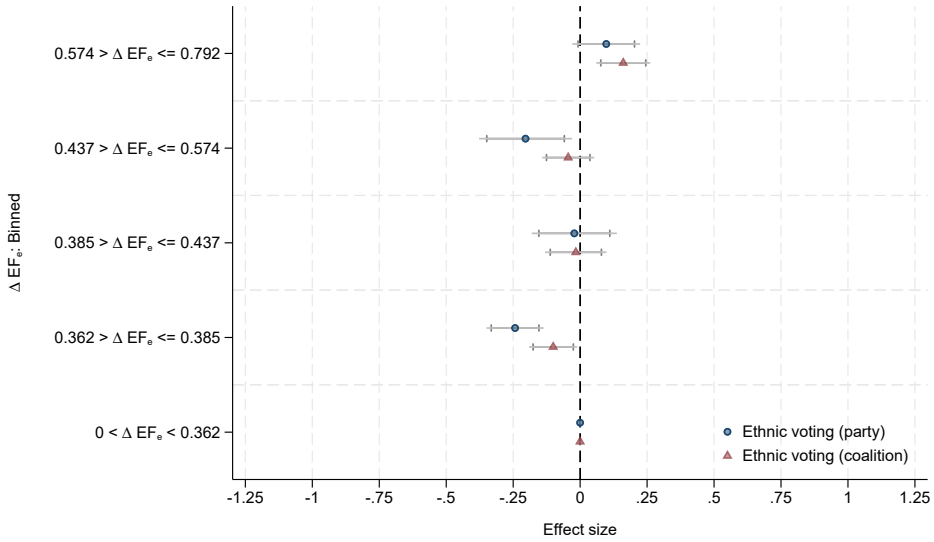
Notes: The figure shows event study coefficients for the effect of reform-induced changes in regional fractionalization (ΔRF_c) and ethnic fragmentation (ΔEF_e) on self-identification. Panel (A) focuses on ΔRF_c and reports the β_t's; panel (B) focuses on ΔEF_e and reports the γ_t's. Circles represent estimates based on a specification with an indicator for identifying equally or more with the nation compared to the respondent's ethnic groups; red triangles restrict the indicator to identifying more with the nation compared to one's ethnicity. All specifications include the following pair controls: Age and indicator variables for residence in an urban cluster, being female, owning a radio, TV, and motorized vehicle. All specifications include county and time fixed effects. 95% confidence intervals based on two-way clustered standard errors at the province-ethnicity and county level are plotted as gray error bars.

Figure B-5
Effect heterogeneity by treatment dosage

(A) Regional fractionalization (binned)



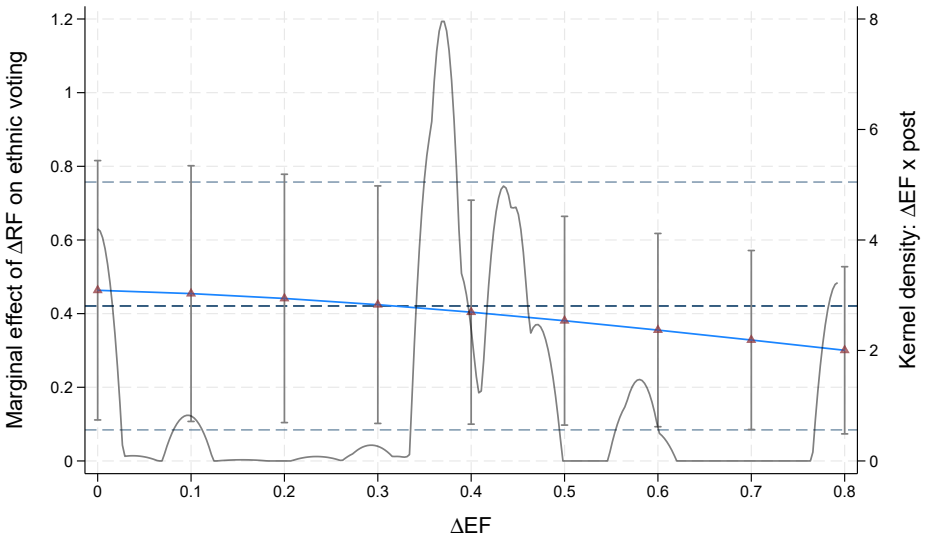
(B) Ethnic fragmentation (binned)



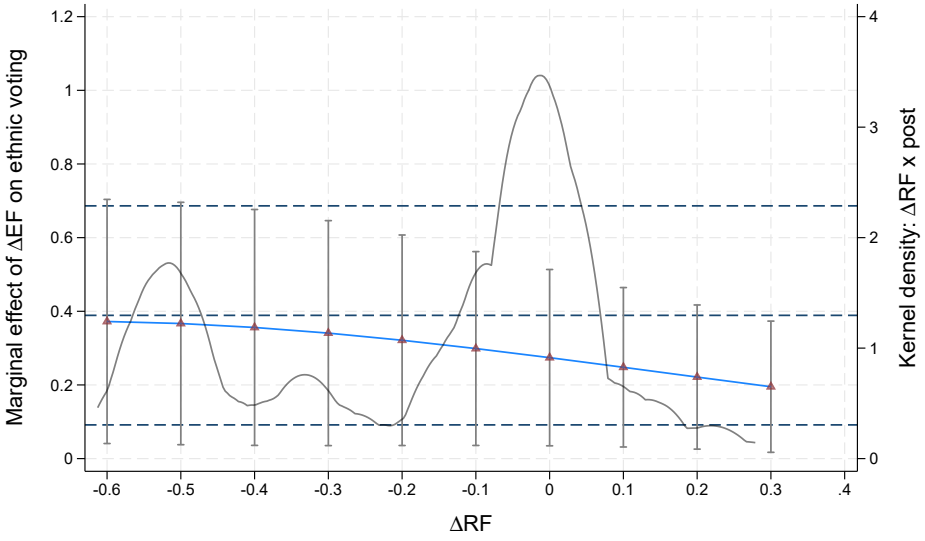
Notes: The figure reports the coefficients binned coefficients of $\Delta RF_c \times D_t$ (panel A) and $\Delta EF_e \times D_t$ obtained from out baseline specification (column 2 of Table I The underlying specification includes county-by-ethnicity and time-fixed effects, and controls for the age of a respondent, indicators if they live in an urban survey cluster, are female, and indicators whether respondents own a TV, radio, or motorized vehicle. Standard errors are two-way clustered at the province-by-ethnicity and county levels. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

FIGURE B-6
Marginal effects: $\Delta\ RF$ & $\Delta\ EF$

(A) Effect ΔRF_c



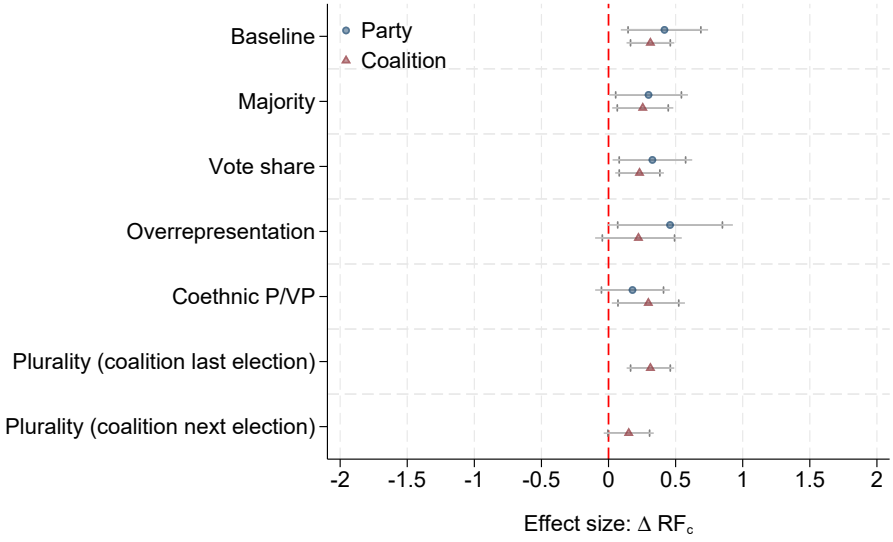
(B) Effect ΔEF_e



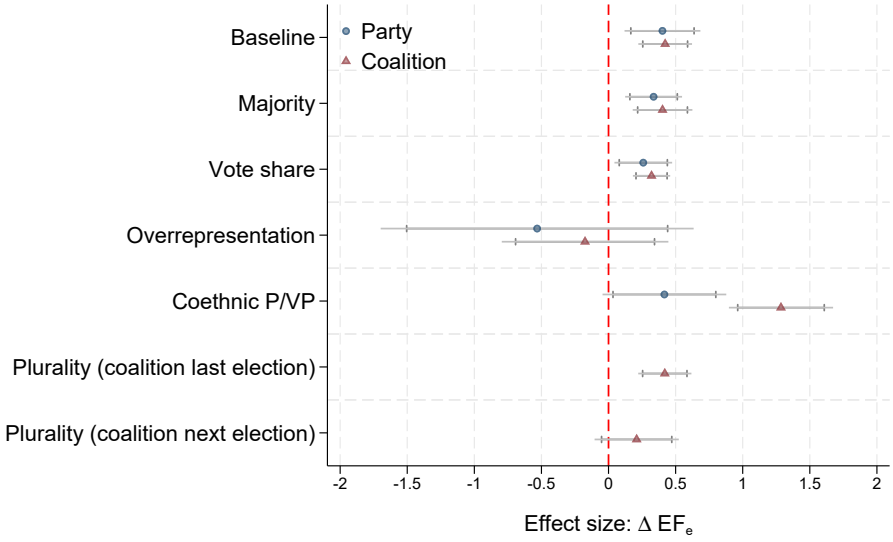
Notes: The figure plots the marginal effects on $\Delta\ RF\ \times D_t$ (panel A) and $\Delta\ EF\ \times D_t$ (panel B), over the empirical distribution of the respective other measure on party-based ethnic voting. The plots are based on the logit specification depicted in column (4) of Table B-1.

Figure B-7
Robustness tests with alternative voting outcomes

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



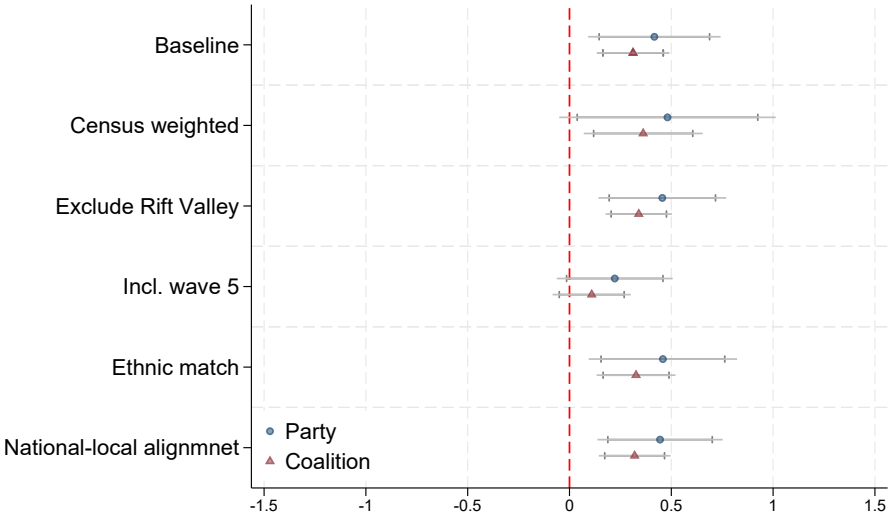
(B) Effect of changes in ethnic fragmentation on ethnic voting



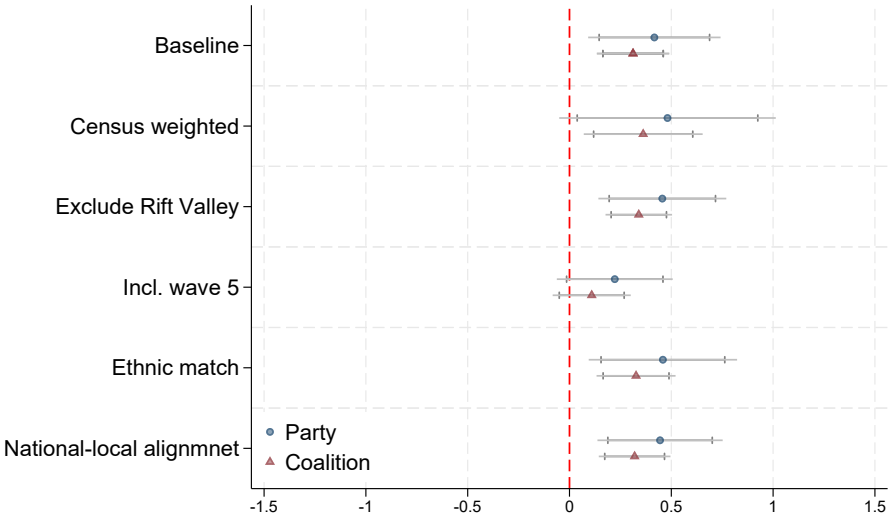
Notes: The figure shows difference-in-differences coefficients based on the main results, including controls of Table I of alternative voting measures (party-based measures in blue circles and coalition-based measures in red triangles). Panel A shows estimates for regional fractionalization, and panel B shows estimates for ethnic fragmentation.Baseline is our main plurality measure. Majority is only unity for parties/coalitions that receive 50% of more of the vote share of an ethnic group in a survey round. Group share uses the continuous vote share of the plurality party. Overrepresentation is the voting dummy for the party that is most overrepresented by groups within a survey round (Amodio et al., 2024). Coethnic P/VP is voting for a party headed by a co-ethnic candidate for president or vice-president (only defined for the Kalenjin, Kamba, Kikuyu, and Luo). Plurality (coalition past election) and plurality (coalition next election) replicate the plurality measure but construct the coalitions based on the past or next election (rather than known as of the survey date). 95% confidence intervals based on two-way clustered standard errors at the province-by-ethnicity and county level are plotted as gray error bars.

FIGURE B-8
Robustness tests with additional controls and perturbed samples

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

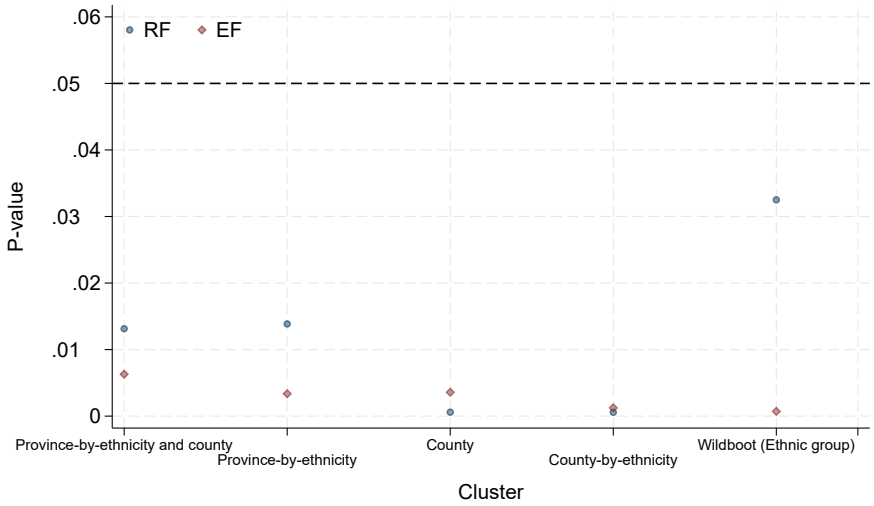


(B) Effect of changes in ethnic fragmentation on ethnic voting



Notes: The figure shows difference-in-differences coefficients of the effect of reform-induced changes in border alignment on party-based ethnic voting for alternative, independent variables and sample perturbations. Panel A shows estimates for regional fractionalization, and panel B shows estimates for ethnic fragmentation. Exclude Rift Valley indicates that we exclude all counties of the former Rift Valley Province. Ethnic match indicates that we exclude all respondents whose language spoken at home does not match the language spoken at home by the Afrobarometer interviewer. National-local alignment, controls 95% confidence intervals based on two-way clustered standard errors at the province-by-ethnicity and county level are plotted as gray error bars.

FIGURE B-9
Alternative clustering of the standard errors



Notes: The figure reports estimated p-values of regional fractionalization (blue dots) and ethnic fragmentation (red diamonds) of our baseline specification (column 2 of Table I) for alternative forms of standard error clustering or their calculation.

B.2. Tables

TABLE B-1
Main results: Logit and triple-interaction

	Dependent variables: Ethnic voting (party-based)					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta RF_c \times D_t$	2.332***	2.334**	4.670**	4.708**	0.410**	0.407**
	(0.898)	(0.915)	(2.035)	(2.028)	(0.163)	(0.165)
$\Delta EF_e \times D_t$	1.912**	1.853**	0.361	0.275	0.307*	0.293*
	(0.837)	(0.848)	(1.230)	(1.202)	(0.154)	(0.153)
$\Delta RF_c \times \Delta EF_e \times D_t$			-5.266	-5.354	-0.804	-0.826
			(3.419)	(3.341)	(0.671)	(0.652)
Est-M.	LPM	LPM	Logit	Logit	Logit	Logit
County-by-ethnicity FE	✓	✓	✓	✓	✓	✓
Time-FE	✓	✓	✓	✓	✓	✓
Controls	–	✓	–	✓	–	✓
Obs	6106	6097	6106	6097	6337	6328

Notes: The table reports the regression results of regressing our main ethnic voting proxy (plurality) on the post-treatment indicator times change in regional fractionalization ($\Delta RF_c \times D_t$), and change ethnic fragmentation ($\Delta EF_e \times D_t$). All specifications include county-by-ethnicity and time-fixed effects. Controls include the age of a respondent, indicators if they live in an urban survey cluster, are female, and indicators whether respondents own a TV, radio, or motorized vehicle. Standard errors are two-way clustered at the province-by-ethnicity and county levels. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B-2
Main results: Single component effects

	Dependent variables:					
	Party			*Coalition*		
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta RF_c \times D_t$	0.421**	0.227**		0.316***	0.204**	
	(0.172)	(0.093)		(0.094)	(0.081)	
$\Delta EF_e \times D_t$	0.389**		0.218	0.409***		0.316
	(0.152)		(0.345)	(0.111)		(0.254)
Ethnofederal effect						
$\beta\hat{\sigma}_{\Delta RF_c} + \gamma\hat{\sigma}_{\Delta EF_e}$	0.128	0.0358	0.0344	0.115	0.0322	0.0499
SE	0.0413	0.0148	0.0544	0.0257	0.0127	0.0402
County-by-ethnicity FE	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓
Tribe-by-time FE	–	✓	–	–	✓	–
County-by-time FE	–	–	✓	–	–	✓
Controls	✓	✓	✓	✓	✓	✓
Obs	6328	6328	6328	6328	6328	6328

Notes: The table reports the regression results of regressing our main ethnic voting proxy (plurality party in columns 1 to 3) on the post-treatment indicator times change in regional fractionalization ($\Delta RF_c \times D_t$), and change ethnic fragmentation ($\Delta EF_e \times D_t$). Columns 4 to 6 replicate columns 1 to 3 using the coalition based measure of ethnic voting. All specifications include county-by-ethnicity and time-fixed effects. In columns 2, controls include the age of a respondent, indicators if they live in an urban survey cluster, are female, and indicators whether respondents own a TV, radio, or motorized vehicle. In columns 2 and 5 we include ethnicity-by-time fixed effects to isolate the partial impact of a change in regional fractionalization. In columns 3 and 6 we include county-by-time fixed effects to isolate the partial impact of a change in ethnic fragmentation. Standard errors are two-way clustered at the province-by-ethnicity and county levels. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE B-3
Controlling for other constitutional changes: Coalition results

	Dependent variables: Ethnic voting (coalition)					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta RF_c \times D_t$	0.322***	0.277***	0.295***	0.304***	0.284***	0.321***
	(0.090)	(0.085)	(0.084)	(0.109)	(0.103)	(0.080)
$\Delta EF_e \times D_t$	0.469***	0.391***	0.402***	0.426***	0.440***	0.420***
	(0.093)	(0.080)	(0.085)	(0.102)	(0.108)	(0.078)
$\Delta RF_c(Constituencies) \times D_t$	-0.003					
	(0.098)					
$\Delta EF_e(Constituencies) \times D_t$	0.475*					
	(0.282)					
$\Delta RF_c(Local\ authority) \times D_t$		-0.086*				
		(0.050)				
$\Delta EF_e(Local\ authority) \times D_t$		0.348				
		(0.246)				
$\Delta RF_c(District) \times D_t$			-0.030			
			(0.042)			
$\Delta EF_e(District) \times D_t$			0.194			
			(0.231)			
Δ *Adm. unitsize(pop)* $\times D_t$				0.018		
				(0.055)		
Δ *Capital proximity* $\times D_t$					0.064	
					(0.050)	
Support referendum $\times D_t$						0.051*
						(0.029)
County-by-ethnicity FE	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓
Obs	5895	5984	5987	6328	6328	6328

Notes: The table reports the regression results of regressing our main ethnic voting proxy (plurality)), based on the coalition classification on the post-treatment indicator times change in regional fractionalization ($\Delta RF_c \times D_t$), and change ethnic fragmentation ($\Delta EF_e \times D_t$), controlling for alternative border changes (columns 1 to 3). Specifically, changes between electoral constituencies, local authorities to counties, and districts to counties. Columns 4 and 5 add controls for proxies of the degree of decentralization. The admin unit size (proxied by population), the average distance of respondents to the county capital compared to the province capital. Column 6 controls for the province-level support of the constitutional referendum. All specifications include county-by-ethnicity and time-fixed effects. Controls include the age of a respondent, indicators if they live in an urban survey cluster, are female, and indicators whether respondents own a TV, radio, or motorized vehicle. Standard errors are two-way clustered at the province-ethnicity and county levels. $p < 0.1$, $p < 0.05$, $p < 0.01$.

TABLE B-4
Effects of optimal reform on ethnic voting

Ethnic group	Predicted change in ethnic voting due to			Population share
	ΔEF	$\Delta\ RF$	$\Delta\ EF + \Delta RF$	
Kikuyu	0.000	-0.004	-0.004	0.208
Luhya	0.000	-0.007	-0.007	0.148
Luo	0.005	-0.117	-0.113	0.124
Kamba	0.010	-0.189	-0.179	0.114
Kalenjin	0.000	-0.008	-0.008	0.114
Embu / Meru	0.014	-0.193	-0.179	0.063
Kisii	0.010	-0.192	-0.181	0.062
Mijikenda	0.010	-0.074	-0.064	0.046
Maasai / Samburu	0.001	-0.007	-0.006	0.023
Turkana	0.139	-0.158	-0.019	0.013
Change in ethnic voting for these ten groups: -0.063				
Change in ethnic voting for Kenya: -0.062				

Notes: The table reports the aggregate voting change per group (for the largest ten groups) by multiplying the difference-in-difference coefficients with the group-county-specific populations. It also reports the population-weighted predicted ethnic voting change for the big four groups and the country below.

C. Theoretical framework: Ethnofederalism and ethnic voting at the national level

This section presents a simple theoretical framework illustrating the mechanism by which devolution and local government control reduce ethnic voting.

Setting: There is a country with ethnic groups $e = 1, ..., N_e$ and political regions $r = 1, ..., N_r$. The share of the total population identifying with group e and living in region r is $s_{e,r} \geq 0$. Hence, the population share of region r is $s_r = \sum_{e=1}^{N_e} s_{e,r}$ and the population share of group e is $s_e = \sum_{r=1}^{N_r} s_{e,r}$. We denote the largest group in region r by e_r.

We assume that each region r has a governor identifying with its largest group e_r and focus on the national presidential election. There are different presidential candidates (or parties) p differing in their ethnicity e_p and their ability $\alpha_p \in [0, 1]$ in collecting tax revenues. Alternatively, we can think of α_p as their honesty, which affects the tax revenues that are not "eaten" by the president and their clan.

A central government headed by president p raises tax revenues $T_p = a_p \tau Y$, where τ and Y are the exogenous tax rate and the exogenous aggregate income. The share $d \in (0, 1)$ (where d may stand for devolution) of the tax revenues T_p are distributed to the political regions in proportion to their population sizes s_r, while $(1 - d)T_p$ remain at the central government. The president provides the national public goods $G_p = (1-d)T_p$, which generates utility G_p for coethnic individuals, i.e., individuals identifying with group e_p, and ψG for all other individuals, where $\Psi \in (0, 1)$. The governor of region r provides the regional public good $g_r = s_r dT$, which generates utility g_r for coethnic individuals, i.e., individuals identifying with group e_r, and ψg_r for all other individuals in region r, where $\psi \in (0, 1)$.[2]

Vote choices: We assume that individuals vote for the presidential candidate who, if elected, would maximize their aggregate utility from national and local public goods. All voters would find it ideal to have a coethnic president with high ability a_p. Hence, each voter would prefer a coethnic presidential candidate over an equally or less skilled candidate from another group. Here we focus on how much lower the ability of a coethnic presidential candidate would need to be for the voter to prefer a non-coethnic presidential candidate. For this purpose, let us denote the ability of the coethnic presidential candidate by $\underline{\alpha}$ and the ability of the non-coethnic presidential candidate by $\overline{\alpha}$.

Let us first look at voters in region r who identify with the largest group $e = e_r$ in this region. These voters get utility $[(1 - d) + s_r d]\underline{\alpha}\tau Y$ when voting for the coethnic presidential candidate, and utility $[\Psi(1 - d) + s_r d]\overline{\alpha}\tau Y$ when voting for the non-coethnic

[2]For our results, it is important that g_r is increasing in s_r and d (and that G_p is decreasing in d), but it is not important that these effects are linear.

presidential candidate. (In both cases, the first product is their utility from national public goods and the second product their utility from regional public goods.) Hence, they prefer the coethnic presidential candidate if and only if

$$\frac{\overline{\alpha}}{\underline{\alpha}} < \hat{\alpha}(e = e_r) \equiv \frac{(1-d) + s_r d}{\Psi(1-d) + s_r d}.$$

Similarly, voters in region r who identify a minority group $e \neq e_r$ prefer the coethnic presidential candidate if and only if

$$\frac{\overline{\alpha}}{\underline{\alpha}} < \hat{\alpha}(e \neq e_r) \equiv \frac{(1-d) + \psi s_r d}{\Psi(1-d) + \psi s_r d}.$$

We now present and discuss the main insights offered by this simple theoretical framework.

Result 1: Devolution reduces ethnic voting.

Proof: The thresholds $\hat{\alpha}(e = e_r)$ and $\hat{\alpha}(e \neq e_r)$ are both decreasing in d because $\Psi < 1$. Hence, larger d induces voters to prefer the non-coethnic presidential candidate already for lower relative skills $\overline{\alpha}/\underline{\alpha}$.

Intuition: Devolution implies that more public resources are spent at the regional level. This reduces the benefits of having a coethnic president allocating the national public goods but does not change the importance of having an able president who can generate high revenues. Hence, devolution makes the coethnicity of the presidential candidate relatively less important.

Result 2: Identification with the regional majority reduces ethnic voting.

Proof: It holds that $\hat{\alpha}(e = e_r) > \hat{\alpha}(e \neq e_r)$ because $\psi < 1$. Hence, voters prefer the non-coethnic presidential candidate already for lower relative skills $\overline{\alpha}/\underline{\alpha}$ if $e = e_r$.

Intuition: Regional public goods are relatively more important for voters identifying with the ethnic group that is the largest in the region and provides the governor. This increases the benefits of having an able president who can generate high revenues. Hence, the coethnicity of the presidential candidate becomes relatively less important.

Result 3: Larger regions reduce ethnic voting.

Proof: The thresholds $\hat{\alpha}(e = e_r)$ and $\hat{\alpha}(e \neq e_r)$ are both decreasing in s_r because $\Psi < 1$. Hence, larger s_1 induces voters to prefer the non-coethnic presidential candidate already for lower relative skills $\overline{\alpha}/\underline{\alpha}$.

Intuition: Economies of scale make regional public goods relatively more important for voters in larger regions. This increases the benefits of having an able president who can

generate high revenues. Hence, the coethnicity of the presidential candidate becomes relatively less important.