Ethnic Favoritism: An Axiom of Politics?[*]

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Abstract

We study ethnic favoritism in a global sample and rely on nighttime light intensity to capture a broad range of preferential policies targeted towards the political leaders' ethnic homelands. We construct two panel data sets with several thousand ethnographic regions from around 140 multi-ethnic countries and annual observations from 1992 to 2013. We find robust evidence for ethnic favoritism: nighttime light becomes 7%–10% more intense in the political leaders' ethnic homelands. We document that ethnic favoritism is a global phenomenon not restricted to Africa, poor countries, or autocracies. We also provide evidence that ethnic favoritism is partly motivated by electoral concerns and more prevalent in the presence of ethnic parties.

JEL Codes: D72, R11, J15, O43.

Keywords: Ethnic favoritism, political leaders, institutions, elections, ethnic parties.

1   Introduction

In his study on ethnic politics in Zambia, Posner (2005, p. 97) observes that "[t]he lesson that the President will favor his own ethnic group has become, for many Zambians, an axiom of politics." Zambia is no exception. There is plenty of anecdotal as well as rigorous evidence for ethnic favoritism in many African countries. Kenya is a prominent example. Many citizens and international observers are well aware that both the Kalenjin-dominated government around Daniel arap Moi, who was president from 1978 to 2002, and the Kikuyu-dominated government around Mwai Kibaki, who was president from 2002 to 2013, engaged in patronage and ethnic favoritism (Wrong, 2009). Recent studies have exploited changes in the ethnicity of high-level politicians to quantify the extent of ethnic favoritism in Kenya. Thereby, Burgess et al. (2015) focus on road building across districts with different ethnic compositions, and Kramon and Posner (2016) on educational attainments across individuals from different ethnic groups.

Few studies go beyond the level of individual countries.[1] Franck and Rainer (2012) are an exception. They find evidence for widespread ethnic favoritism in infant mortality and various educational outcomes in a panel of 18 African countries. Moreover, Kramon and Posner (2013) document the pattern of ethnic favoritism in six African countries. They show that this pattern varies dramatically across policy areas and argue that ethnic favoritism in one policy area may often be compensated with rationing in another area. They therefore advise against making general claims about ethnic favoritism based on empirical findings for a single policy area.

We offer a novel approach for studying the prevalence and determinants of ethnic favoritism. Our approach differs in two important ways from the previous literature. First, we go beyond Africa and study Posner's (2005) axiom of politics at the global level using two large and diverse samples of multi-ethnic countries from all over the world. Second, we use a broad measure of ethnic favoritism that allows capturing the aggregate distributive effect of a wide range of policies. In particular, we rely on nighttime light intensity recorded by US Air Force weather satellites for the years 1992 to 2013. Given our global coverage and our broad measure, we think of ethnic favoritism in broad terms. We collect information about the political leaders' ethnicities and understand by ethnic favoritism all policies that mainly benefit the political leaders' own ethnic group. These policies can be diverse and include, e.g., patronage, targeted public infrastructure projects, and transfer payments. Like the policies, the motives can be diverse too: some political leaders may be more altruistic towards their group, while others may support their group for strategic reasons, e.g., electoral concerns.

The units of observation in our analysis are ethnographic regions. We follow Alesina

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[1]Golden and Min (2013) provide an inventory of more than 150 empirical studies on distributive politics. They find that most studies focus on a single democratic country and a single policy area.

et al. (2016) in using two different samples based on the two most prominent ethnographic maps available. These maps are based on the Ethnologue data and the Geo-Referencing of Ethnic Groups (GREG) project, which has digitalized the classical Soviet Atlas Narodov. Our Ethnolouge-based sample includes 7,653 ethnographic regions from 141 multi-ethnic countries and our GREG-based sample 2,032 ethnographic regions from 137 multi-ethnic countries. The main variables are nighttime light intensity and a variable that indicates whether an ethnographic region is the ethnic homeland of the country's current political leader.

We find that being the political leaders' ethnic homelands is positively associated with nighttime light intensity after including region-fixed effects to control for time-invariant regional characteristics, and country-year dummy variables to control for country-wide changes over time. To address the potential endogeneity of the political leaders' ethnicity, we also document that the ethnic homelands of the future political leaders do not have significantly more intense nighttime light in the years prior to an ethnic transition, i.e., prior to a leadership transition associated with a change in the political leader's ethnicity. We thus interpret the positive association between being the political leaders' ethnic homelands and nighttime light intensity as evidence for ethnic favoritism. Our baseline estimates imply that ethnographic regions have 7%–8% more intense nighttime light and around 2% higher regional GDP if they are the political leaders' ethnic homelands than they would have in the counterfactual situation in which the political leaders belonged to other ethnic groups. Combining the Ethnologue data with linguistic trees, we show that ethnic favoritism extends to ethnic groups that are linguistically close to the political leader. Moreover, we find that ethnographic regions even have 10% more intense nighttime light and around 3% higher regional GDP if they are the political leaders' ethnic homelands than they would have if the political leaders belonged to linguistically distant ethnic groups.

Our large and diverse sample allows studying possible determinants and the prevalence of ethnic favoritism. We first confirm widespread ethnic favoritism in Africa in our sample that includes more African countries than previous studies. We then show that the preconception that ethnic favoritism is mainly or even entirely an African phenomenon is mistaken. Ethnic favoritism seems to be as prevalent outside of Africa as it is in Africa itself. Hence, Posner's axiom of politics holds globally. The prevalence of ethnic favoritism is also not significantly related to the level of economic development or the quality of political institutions. Given that ethnic favoritism seems to be a general phenomenon, we then try to understand why political leaders engage in ethnic favoritism. Exploiting information on elections and term limits, we provide evidence that electoral concerns matter, but that alternative motives like altruism towards co-ethnics are likely to be important as well. We further find that ethnic favoritism tends to be more prevalent in the presence of ethnic parties.

Our results further reveal that nighttime light intensity is back at its normal level already two years after an ethnic transition. Hence, ethnic favoritism does not contribute to sustainable development.

Our paper primarily contributes to the literature on ethnic favoritism, which goes back to Bates (1974) and includes the studies discussed above. Our main contributions to this literature are the global sample and the use of nighttime light intensity to capture a broad range of preferential policies targeted towards the political leaders' ethnic homelands. Thereby we also contribute to a recent debate on the role of political institutions: Burgess et al. (2015) find that ethnic favoritism in road building in Kenya disappears if political institutions improve from being autocratic to being anocratic or even democratic.[2] In contrast, Franck and Rainer (2012) and Kramon and Posner (2016) find at best very limited constraining effects of better political institutions on ethnic favoritism. Our global sample and broad measure of ethnic favoritism also suggest limited constraining effects: ethnic favoritism tends to be most prevalent in anocracies, and to exist even in democracies. We submit that the political leaders' electoral concerns may explain why democratization is often not effective in curbing ethnic favoritism.

More generally, our paper contributes to the literature studying the effects of ethnic divisions on governance and economic development.[3] Easterly and Levine (1997) show that ethnic fractionalization impacts negatively on economic development. Various possible channels have been discussed. La Porta et al. (1999) and Alesina et al. (2003) find that ethnic fractionalization lowers the quality of government, and Alesina and Zhuravskaya (2011) show that ethnic segregation has a particularly strong negative effect on the quality of government. Miguel and Gugerty (2005) and Glennerster et al. (2013) study whether ethnic diversity reduces public goods provision. Hjort (2014) finds evidence that ethnic diversity negatively affects workers' productivity. Francois et al. (2014, 2015) study how political leaders in ethnically diverse Sub-Saharan African countries increase their chances of staying in power by sharing the benefits of holding office and by regularly replacing their ministers. They argue that these policies are one reason for the poor performance of many ethnically diverse Sub-Saharan African countries. Alesina et al. (2016) find inequality between ethnographic regions to be negatively linked to country-wide economic performance. We contribute to this literature by showing that ethnic favoritism is common in societies with ethnic cleavages, and that ethnic favoritism does not lead to sustainable development in the targeted regions. These findings suggest that ethnic favoritism is another reason why ethnic cleavages may hinder economic development.[4]

Our paper is most closely related to Hodler and Raschky's (2014a) study on regional

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[2]Anocracies are regimes that have both autocratic and democratic traits. Many scholars refer to countries with intermediate polity scores as anocracies (see section 3).

[3]See Alesina and La Ferrara (2005) for an overview.

[4]Our paper further relates to the emerging literature on the role of political leaders in economic development (e.g., Jones and Olken 2005, Kasara 2007, Dreher et al. 2009, and Besley et al. 2011)

favoritism. They also exploit variation in nighttime light intensity within subnational regions, but focus on administrative regions at the second subnational level (SN2 regions) rather than ethnographic regions, and on the political leaders' birthplaces rather than their ethnicities. They find strong evidence that political leaders favor the SN2 region in which they were born.[5] However, we show that ethnic favoritism is substantially different from birthplace favoritism along a number of dimensions:[6] First, from a geographical perspective, birthplace favoritism focuses on a single, rather small geographic area that is the political leader's SN2 birth region. In contrast, ethnic favoritism looks at regions that are on average larger and sometimes contain multiple, physically separated areas within the same country.[7] Our results show that regions that share the same ethnicity as the political leader but are located in parts of the country other than his birth region still benefit. Second, and maybe opposite to some common perception, we show that birthplace favoritism and ethnic favoritism affect different subsets of countries. Hodler and Raschky (2014a) find that birthplace favoritism is a phenomena that mainly occurs in countries with weak political institutions. In contrast, we find little constraining effects of better political institutions on ethnic favoritism. We even show that electoral concerns are one important motive for ethnic favoritism and that ethnic parties may facilitate ethnic favoritism. Third, as a consequence, the policy implications of these two papers differ as well. While improving political institutions may help to curb birthplace favoritism, it may not help to address ethnic favoritism. More importantly, a key feature of democratization, free elections, might even exacerbate ethnic favoritism.

The remainder of the paper is organized as follows: Section 2 presents anecdotal evidence on ethnic favoritism outside of Africa, section 3 the data, section 4 the empirical strategy, section 5 our findings, and section 6 some concluding remarks.

2 Anecdotal evidence

In this section we provide anecdotal evidence for ethnic favoritism in countries from all over the world. We thereby focus on countries outside Africa, as the prevalence of ethnic favoritism in Africa is well documented and as we are the first to study ethnic favoritism in a global sample. The anecdotal evidence from these countries illustrates the various forms that ethnic favoritism can take outside of Africa.

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[5]Like us, Soumahoro (2015) also builds on Hodler and Raschky (2014a) to study ethnic favoritism. Unlike us, he exploits only cross-sectional variation and restricts his analysis to Africa. He finds a very large effect of being the political leader's ethnic homeland on nighttime light intensity. We show in Table 3 that the coefficient estimates are indeed many times larger in the absence of ethnographic-region fixed effects that control for time-invariant omitted variables.

[6]Ahlerup and Isaksson (2015) also find birthplace and ethnic favoritism to be independent phenomena in their analysis of survey data from Afrobarometer.

[7]An average country has 54 (Ethnologue) or 15 (GREG) ethnographic regions in our sample, but 305 SN2 regions in Hodler and Raschky's (2014a) sample.

Bolivia: All Bolivian presidents had been Spanish descendants until Evo Morales from the indigenous Aymara ethnic group was elected in December 2006. "Evo cumple" – Evo delivers – was one of the popular slogans surrounding the policies of the new government. Indeed, besides the increased importance given to indigenous culture, language, and symbols, substantial material benefits reached the indigenous population. Natural resource revenues, which boomed after the renegotiations with the multinational companies operating in the country, were used to fund policies targeting the poor indigenous population in the highlands, particularly focusing on literacy, health, road construction, and rural electrification. About USD 480 million were disbursed to fund some 3,900 small infrastructure projects (Farthing and Kohl 2014, Sivak 2008).[8] The positive net effects of these policies has been widely recognized, with substantial increases in literacy rates, a drastic reduction of the maternal mortality rate, and an overall reduction of poverty rates in the countryside (Farthing and Kohl 2014).

Land redistribution and titling explicitly targeted the indigenous population: by 2013 about 157 million acres had been affected, with about 321,000 titles granted mostly to indigenous people and peasants (Farthing and Kohl 2014). The indigenous population was also directly benefitting from a series of reforms in the political and educational systems. The new constitution reserved a quota for indigenous representation in the main political institutions.[9]

The nature and effects of the new government policies, however, have generated several critics. Despite the rhetoric describing the new constitution as plurinational to stress the equal footing on which all ethnic groups stand, the final document gives special relevance to the Aymara communitarian values (Albro 2010). Similarly, it is argued that key reforms were guided by Aymara politicians, and that the development model underlying the new government's economic policies has been conceptualized by Aymara intellectuals (Farthing and Kohl 2014).

In the words of Juan del Granado, a human rights lawyer and former mayor of Bolivia's capital La Paz: "Unfortunately the attitude in the government – that 'now it is our turn' – is contradictory to the construction of a new society, and it smacks of vengeance" (cited in Farthing and Kohl 2014). Also other indigenous groups are expressing their discontent, especially among lowland communities, complaining that their interests have been largely

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[8]The number of municipalities without a health post, mainly concentrated in the rural and indigenous areas, was more than halved, and the number of health centers and hospitals doubled. Moreover, three cash transfer programs were implemented: a standard conditional cash transfer funding children who stay in school ("Bono Juancito Pinto"), a pension scheme to lift old people out of poverty ("Renta Dignidad"), and a cash transfer for women attending pre- and postnatal care ("Juana Azurduy"). In 2009, the total disbursement in these three cash transfers amounted to close to USD 286 million, about 1.3% of GDP (Laserna 2011).

[9]For example, Felix Patzi, an Aymara sociologist, was named education minister with a clear mandate to increase the presence of indigenous culture in education. This led to the creation of indigenous universities, supported by the government and local communities, with the explicit goal of promoting higher education among the indigenous population.

ignored.[10]

Hence, Evo Morales' government may have fostered the emergence of new indigenous economic elites associated with the government, but, arguably, it did not change the rules of the political game, plagued by corruption, patronage, and inefficiency. Quoting the disenchanted words of Javier Medina, a Bolivian philosopher: "The face of government may have become more indigenous, mostly Aymara. However, the behaviour and way of managing the state remain the same" (cited in Farthing and Kohl 2014).

Pakistan: Pakistan is a state consisting of ethnic groups that had never been united before the arrival of the British. In fact, the Baluch, Sindhis, and Pashtuns, who had resisted Punjabi incursions into their ancestral homelands for centuries, have found themselves trapped in a political structure dominated by a Punjabi majority and, to a lesser extent, the Urdu-speaking Muslim immigrants from India. These two groups control the armed forces and key political institutions (Harrison 2009).

As a result, ethnic tensions have been simmering throughout Pakistan's history. Many of the tensions are related to Punjabi economic exploitations. One example is the unfavorable deals minorities get for their natural resources: "Although gas obtained from Baluchistan accounts for 30 percent of Pakistan's total gas production, Baluchistan consumes only 17 percent of its own output, while the remaining 83 percent goes to the rest of the country, primarily to the Punjab. The central government charges a much lower price for Baluchistan gas than for gas produced in other provinces and pays lower royalties" (Harrison 2009). Another example is the distribution of the Indus River waters between upstream Punjab and downstream Sind: "All of the 19 barrages, 43 canal systems, three major storage dams and 12 link canals that have been built in the upper reaches of the Indus since Partition have either been located in the Punjab or have been designed to benefit agricultural production there. Sind's share of the Indus waters has been drastically reduced since Partition, causing widespread economic devastation. In contrast to an annual flow of over 94 million acre feet of water into the Arabian Sea before Partition, the Indus today often runs dry before it reaches the ocean, and 12 million Sindhi farmers and fishermen have lost their livelihoods" (Harrison 2009).

Many ethnic transitions took place in Pakistan in the late 1980s and the 1990s. Benazir Bhutto, a Sindhi politician, became prime minister in 1988. She abandoned the model of state-led development. The deregulations and privatizations went hand-in-hand with corruption and nepotism, which finally led to her dismissal by the president in 1990 (Burki 1999). The Punjabi politician Mian Nawaz Sharif was elected prime minster in the same year. The main differences in his approach was the provision of public employment for the educated unemployed in urban areas and the building of expensive infrastructure.

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[10]A Guarani leader said that "[t]hey want to control everything, to do everything according to their culture, the Andean culture. Very little of what we hoped for as indigenous people is being advanced, only the things that Evo wants. No, Evo and his ministers have abandoned us" (cited in Postero 2010).

The main project was a highway from the Islamabad Capital Territory, which borders the province of Punjab, to this province's capital Lahore. This highway only benefitted fellow Punjabis. In 1993, Mian Nawaz Sharif was succeeded by Benazir Bhutto. She was once again followed by Nawaz Sharif before Urdu-speaking Pervez Musharraf took power in a coup d'etat in 1999.

Ukraine: Ethnolinguistic divides have played an important role in the Ukraine ever since its independence in 1991. Rjabtschuk (1992) coined the expression of "two Ukraines." The first Ukraine is found in the West, where the large majority are native Ukrainian speakers. There, people have a strong national identity, and many are oriented towards Western Europe. The second Ukraine is in the East, where many people are native Russian speakers and are oriented towards Russia. The Ukrainian Constitution of 1996 states that "[t]he state language in Ukraine is the Ukrainian language." It continues that "[t]he State ensures the comprehensive development and functioning of the Ukrainian language in all spheres of social life throughout the entire territory of Ukraine." A particularly strong supporter of the idea that the Ukrainian language is important for strengthening national identity was the Ukrainian speaking Viktor Yushchenko, who was president from 2005 to 2010. He was running campaigns with slogans such as "one nation – one language – one church" or "think in Ukrainian" (Olszanski 2012). He was followed by Russian speaking Viktor Yanukovych from Donetsk in the country's East (and of Belorussian descent), who wanted Russian to become the second state language.

In the Ukraine, these ethnolinguistic cleavages are paired with the strong role of the oligarchy. In the early 1990s, an oligarchy established itself thanks to rent-seeking methods during the country's slow transition from communism, and from the mid-1990s onwards politicians and oligarchs formed close ties (Aslund 2015, Leitner et al. 2015). Viktor Yanukovych initially appointed several oligarchs from the country's Russian-speaking East to powerful ministries. Over time, he started concentrating power in the hands of family members and Akhmetov, an influential oligarch from Donetsk. They enriched themselves "through energy subsidies, discretionary public procurement, embezzlement from the state, privileged privatization, fraudulent refunds of value-added tax to exporters, extortion, and corporate raiding" (Aslund 2015).

3   Data

Our units of observation are subnational ethnographic regions, and we construct two panel data sets with annual observations from 1992 to 2013. These two data sets are based on two different ethnographic maps. The first one is from the World Language Mapping System and maps the traditional homelands of the language groups described in the Ethnologue (Gordon, 2005), which provides a comprehensive list of the world's

known living languages. The second map is from the GREG project by Weidmann et al. (2010), who have digitalized the classical Soviet Atlas Narodov Mira and therefore record the ethnic distribution of the world population in the 1960s.

These two maps and the underlying data sets differ in various respects. Among others, Ethnologue is more disaggregated than GREG. Ethnologue features many more ethnographic regions in Africa, the Americas, and Oceania, and somewhat more in Asia. The exception is Europe, where the number of ethnographic regions per country is roughly similar. We use both these ethnographic maps, because they both have their advantages and disadvantages, and because any pattern that prevails in both data sets is unlikely to result from some peculiar coding or mapping of some ethnic groups.[11]

Ethnographic regions are areas of a country that share the same ethnic composition. We drop the few ethnographic regions with a size of less than ten square kilometers or zero population (according to the population density map introduced below). In both data sets, the resulting share of ethnically homogenous ethnographic regions, i.e., regions inhabited by only one ethnic group, is between 75% and 80%, and the large majority of the remaining ethnographic regions are inhabited by two ethnic groups.[12] Excluding countries with only one ethnographic region, and the (mostly small) countries for which we have no information about their political leaders, we end up with a sample of 141 multi-ethnic countries in the Ethnologue data and 137 multi-ethnic countries in the GREG data. There are 131 multi-ethnic countries from all over the world that feature in both data sets.[13] There are 7,653 ethnographic regions (i.e., on average 54 per country) in the Ethnologue sample and 2,032 ethnographic regions (i.e., on average 15 per country) in the GREG sample.[14]

The identity of political leaders is obtained from the Archigos database, version 4.0, by Goemans et al. (2009). This database provides information on the top political leaders of many countries around the world for many years up to 2014. It includes the exact starting and ending dates of the political leaders' time in power. We add to this database the ethnic affiliation of all political leaders who were in power for at least 30 days in the

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[11]Alesina et al. (2016) also use these two ethnographic maps. They provide a complementary discussion of these two maps and the underlying data.

[12]The largest number of ethnic groups in an ethnographic region is 7 in Ethnologue and 3 in GREG.

[13]The most common reason that countries appear in only one data set is that they feature only one ethnographic region according to the other data set. For example, Burundi, Rwanda, and Uruguay are homogenous according to Ethnologue but not according to GREG; while Denmark, Ireland, Madagascar, and Portugal are homogenous according to GREG but not according to Ethnologue. Countries that are homogenous and, therefore, excluded in both data sets include Cuba, Haiti, Iceland, Saudi Arabia, and the two Koreas. Further, we exclude Serbia due to the non-trivial changes of its boundaries during our sample period. In addition, some countries are excluded because the ethnicity of their political leaders is absent in the respective data set (see below).

[14]The distribution of the number of ethnographic regions is heavily skewed. The outliers in Ethnologue are Papua New Guinea with 725 ethnographic regions, Indonesia with 660, India with 606, and Nigeria with 481. The outliers in GREG are Russia with 136 ethnographic regions, Indonesia with 118, and India with 101.

years from 1988 to 2014. We match the ethnicity of these political leaders to the ethnic categories in the GREG and the Ethnologue data, respectively, using Murdock (1959), Fearon (2003), and various web-based sources, including Ethnologue. This matching allows us to construct a variable which indicates whether an ethnographic region is the ethnic homeland of the country's current political leader. This variable, $Leader_{ict}$, is equal to $1/n_{ic}$ if the political leader is from one of the n_{ic} ethnic groups living in ethnographic region i of country c and in power throughout year t. In particular, $Leader_{ict} = 1$ for single-ethnic regions populated by the political leader's ethnic group. We set $Leader_{ict}$ to missing if the country's political leader has a foreign ethnicity; if we could not find any information about his ethnicity; if we could not match his ethnicity to any ethnic category in the Ethnologue or GREG data, respectively; or if his ethnicity is unmapped in Ethnologue.[15] We exclude countries with many missing observations.[16]

The National Oceanic and Atmospheric Administration (NOAA) provides annualized data on nighttime light intensity for the years from 1992 to 2013. These data are based on recordings by US Air Force Weather Satellites in evening hours during the dark half of the lunar cycle in seasons when the sun sets early. NOAA removes observations affected by cloud coverage or northern or southern lights, and processes the data by setting readings that are likely to reflect fires, other ephemeral lights or background noise to zero. The objective is that the reported nighttime light is primarily man-made. NOAA provides the annual data on a scale from 0 to 63 for output pixels that correspond to less than one square kilometer. We calculate the average nighttime light intensity of each ethnographic region for all years from 1992 to 2013 using geographical information system (GIS) software. Our dependent variable $Light_{ict}$ is the logarithm of the average nighttime light intensity in ethnographic region i in country c in year t.[17]

Henderson et al. (2012) advocate the use of nighttime light intensity as a measure of economic activity or economic development.[18] They document a relatively strong asso-

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[15]There are nine political leaders whose ethnicity is missing in both data sets: five leaders with foreign ethnicities (e.g., Alberto Fujimori who is of Japanese origin and was president of Peru) and four leaders for whom we could not find any ethnicity information. In addition, there are some political leaders whose ethnicity we could only match in one of the two data sets, typically Ethnologue, which has on average more ethnic groups per country. For example, Americo-Liberians are listed in Ethnologue (as "Liberian English"), but not in GREG.

[16]Brunei, Djibouti, and Jordan have no political leader with a domestic ethnicity according to GREG and are therefore excluded from this data set. Thailand has many unmapped political leaders according to Ethnologue and is therefore excluded from this data set. We also exclude Moldova, where changes in the coding of the most important political office by Archigos leads to ethnic transitions in the absence of any real changes.

[17]We log transform the data, because the distribution of nighttime light intensity is right-skewed (Henderson et al. 2012, Michalopoulos and Papaioannou 2013, Hodler and Raschky 2014a). We also follow Michalopoulos and Papaioannou (2013, 2014) and Hodler and Raschky (2014a,b) in adding 0.01 to the nighttime light intensity before taking the logarithm. This operation allows us to preserve all the observations without any reported nighttime light, e.g., observations from regions in which the man-made nighttime light remains below the detection limit of the satellites' sensors.

[18]Earlier studies using nighttime light intensity as a proxy for economic activity include Sutton and Constanza (2002), Doll et al. (2006), and Sutton et al. (2007).

ciation between changes in nighttime light intensity and changes in GDP at the country level, and Hodler and Raschky (2014a) provide evidence for a similarly strong association at the level of subnational administrative regions. Given its availability at the local level and its positive association with GDP, nighttime light intensity has become a widely used measure of economic activity or economic development in studies looking at subnational administrative regions (e.g., Hodler and Raschky 2014a,b) as well as ethnographic regions (e.g., Michalopoulos and Papaioannou 2013, 2014, and Alesina et al. 2016).

For our purpose, nighttime light intensity has two further advantages. First, it is measured in the same high quality all over the world and cannot be politically manipulated by opportunistic political leaders. Second, it is less prone to the concern raised by Kramon and Posner (2013), who advise against making general claims about ethnic favoritism based on output measures capturing only a single policy area. While being far from perfect, changes in nighttime light intensity are likely to capture policy changes in a wide range of policy areas. Roads, medical centers, and other public infrastructure projects may well increase the intensity of nighttime light. In addition, higher transfer payments or lower taxes may lead to more private consumption and higher investments, which may both translate into more intense nighttime light.

As an alternative dependent variable, we use the logarithm of nighttime light per capita, $Lightpc_{ict}$. We use the population density maps by Gridded Population of the World, version 3. These maps are available for every fifth year, and we interpolate them for the missing years. We then define $Population_{ict}$ as the logarithm of the population in region i of country c in year t, and $Lightpc_{ict} \equiv Light_{ict} - Population_{ict}$.

We now turn to variables representing potential determinants of ethnic favoritism. We measure country-wide economic development using the logarithm of real GDP per capita, labelled GDP_{ct}. This is based on expenditure-side real GDP at chained PPPs from Penn World Tables, version 8.1. We measure the quality of political institutions by the polity score from the Polity IV project, which is an aggregate measure based on the constraints on the executive, the openness and competitiveness of executive recruitment, and the competitiveness and regulation of political participation. The polity score ranges from -10 to 10, with the former indicating highly autocratic countries and the latter indicating strong democracies. We use a normalized version of the polity score, $Polity_{ct}$, which ranges from 0 to 1, with higher values indicating more democratic institutions, as well as a set of dummy variables for different types of political institutions. Following common practice, we set $Autocracy_{ct} = 1$ for polity scores below -5, $Anocracy_{ct} = 1$ for polity scores between -5 and 5, and $Democracy_{ct} = 1$ for policy scores above 5.

For information on elections we rely on the National Elections Across Democracy and Autocracy (NELDA) database, version 4, by Hyde and Marinov (2012). In particular, we use it to code the years of elections in which the office of the political leader was contested. The dummy variables $Election_{ct}$ is equal to one for country-years in which a leadership

election took place, and zero otherwise.

We mainly rely on the World Bank's Database of Political Institutions for information on term limits. We use this database to construct the dummy variable $TermLimited_{ct}$, which is equal to one if formal restraints, typically binding term limits, prevent the political leader from serving an additional term after the current one, and zero otherwise.[19]

We use three measures to study the role of ethnic parties. The first is the aggregate vote share of ethnic parties, labeled $EthnicShare_c$. We have compiled this vote share in two steps: First, we have assembled a list of ethnic parties consisting of the union of the lists in Ishiyama (2009), Lublin and Wright (2013) and Vogt (2013). Second, we have calculated the aggregate vote share of the parties on this list in the first national legislative elections after 1991, using various web-based sources. The second measure is the party voting fractionalization index by Huber (2012), labeled $EthnicPVF_c$ and available for 43 countries. Countries with high index values are characterized by the presence of many parties with an ethnically relatively homogeneous voter pool.[20] The third measure is based on Afrobarometer, round 6, and available for 33 African countries. It captures the share of respondents in a country answering "the ethnicity of party leaders or members" when asked about the "most important difference between the ruling party and opposition parties." We call this share $EthnicPerception_c$, as it directly measures whether the main parties are perceived as ethnic parties by the people.

Panels A and B in Table 1 provide summary statistics for the main variables in the Ethnologue and the GREG data sets, respectively.

Table 1 about here

Our empirical analysis will primarily exploit ethnic transitions, i.e., transitions in the country's political leadership that are associated with a change in the political leader's ethnicity. Table 2 therefore provides information on leadership and ethnic transitions during our sample period as well as some cross-sectional information on the countries that experienced ethnic transitions.

Table 2 about here

An average country in our data has around four leadership transitions and around one ethnic transition in the years from 1992 to 2013. There are 52 countries with ethnic transitions in our Ethnologue data and 45 in our GREG data. The median number of ethnic transitions in these countries is two, and the mean is around three in both data sets. There are 40 countries that have ethnic transitions according to both data sets. Of these, the country with most ethnic transitions is Switzerland with 12, followed by

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[19]In the Online Appendix, we further make use of the NELDA database to identify country-years with leadership elections in which the incumbent political leader could not run due to binding term limits.

[20]Huber (2012) also provides a party voting polarization index. The two indices lead to similar results in both the Ethnologue and the GREG data.

Guinea-Bissau, Liberia, Nigeria, Pakistan, Papua New Guinea, and Sierra Leone with 5 to 7 ethnic transitions each.[21] There are 12 countries that have ethnic transitions only in the Ethnologue data, mostly because ethnic groups are more disaggregated in Ethnologue, and five countries that have ethnic transitions only in the GREG data, because Ethnologue does not map some ethnic groups, e.g., Hindi-speakers in Fiji and Trinidad and Tobago.

Table 2 shows that slightly more than half of the countries with ethnic transitions are in Africa. However, there are ethnic transitions in all other continents as well. We further see that countries with ethnic transitions tend to be poorer than countries without ethnic transitions, but that their political institutions tend to be of similar quality nevertheless. As one would expect among the countries with ethnic transitions, those in Africa tend to be poorer and to have worse political institutions than those elsewhere. Also, countries with ethnic transitions, especially those outside of Africa, have on average more ethnographic regions.[22]

4 Empirical strategy

Our main objective is to explore whether political leaders favor their ethnic homelands when being in power. We therefore estimate the following equation:

$$Light_{ict} = \alpha_{ic} + \beta_{ct} + \gamma Leader_{ict} + \epsilon_{ict} \tag{1}$$

The ethnographic region-fixed effects α_{ic} control for all time-invariant regional characteristics, e.g., climatic, geographic, and historical factors. The country-year dummy variables β_{ct} control for shocks common to all regions of a given country, as well as for changes in the weather satellites and the deterioration of their sensors over time. Given that we identify ethnic favoritism using changes in the political leaders' ethnicities, and that these changes are likely associated with changes in country-wide policies, the standard errors ϵ_{ict} should be clustered at least at the ethnic leadership spell-country level. We choose to be conservative and cluster the standard errors ϵ_{ict} at the country level, so that the estimates are robust to possible serial correlation in the data.

The coefficient of interest, γ, measures the effect of $Leader_{ict}$ on $Light_{ict}$. A positive coefficient implies that ethnographic regions have more intense nighttime light if a member of their ethnic group(s) is the country's political leader throughout the year than in the

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[21]In Switzerland, a power sharing arrangement ensures that all major political parties and all major ethnic groups are represented in the executive council, and that the individual council members rotate as chairs of the executive council. Bosnia and Herzegovina, which has 20 ethnic transitions according to the GREG data, but none according to the Ethnologue data (where two of the three major ethnic groups are unmapped), has had a similar arrangement since 1998. Our results are not driven by these two countries. If anything, our results become stronger when we exclude these countries, in which the political leaders have little more power than the other members of the executive council.

[22]This difference is mainly due to the high number of regions in India and Indonesia (in both data sets) and in Nigeria and Papua New Guinea (in Ethnologue), which all experienced ethnic transitions.

counterfactual situation in which the political leader belonged to some other ethnic group. We thus interpret a positive and significant coefficient γ as evidence for ethnic favoritism. Equation (1) implies that coefficient γ is identified by the countries experiencing ethnic transitions during our sample period. We exclude all country-years with ethnic transitions in our main specification, because it is unclear whether or not the ethnic homelands of political leaders who enter or exist power should be seen as "treated" in these years.[23]

Our interpretation of a positive and significant coefficient γ as evidence for ethnic favoritism would be questionable if our estimates of γ were biased due to the potential endogeneity of the political leader's ethnicity. Suppose, for instance, that ethnic groups which are becoming more economically active were also becoming more likely to provide the country's next political leader. In this case, a positive association between $Leader_{ict}$ and $Light_{ict}$ may not necessarily indicate ethnic favoritism. To address this concern, we document that ethnographic regions that are not yet the ethnic homelands of a political leader, but will shortly become the ethnic homelands of a new political leader, are not having more intense nighttime light in these years than in other years in which they are not part of the current political leaders' ethnic homelands. Hence, endogeneity does not seem to be a major concern.

Our objectives go beyond establishing the existence of ethnic favoritism. We are also interested in studying the scope of ethnic favoritism and in understanding its determinants and possible motives of the political leaders. We therefore add to our baseline specification interaction terms between $Leader_{ict}$ and various country-level variables, e.g., GDP per capita or polity scores. As our baseline specification already contains country-year dummy variables, there is no need to include these country-level variables individually when adding these interaction terms.

5   Empirical results

5.1   Baseline results

Table 3 reports our main results. Panel A shows the results based on the Ethnologue data and panel B those based on the GREG data.

<div align="center">Table 3 about here</div>

We start in column (1) with a specification that includes the country-year dummy variables but not yet the region-fixed effects. The positive and statistically significant coefficient on $Leader_{ict}$ suggests that there is more economic activity and higher levels of economic development in the political leader's ethnic homelands than in other ethnographic regions

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[23]We show that our results are robust to separately controlling for these ethnic homelands.

of the same country in the same year. This finding is consistent with the presence of ethnic favoritism but vulnerable to any time-invariant omitted-variable bias.

We keep the same specification in column (2) but restrict our sample to the countries that experienced ethnic transitions during our sample period. The reason is that all subsequent specifications include region-fixed effects and, therefore, only exploit variation in these countries. The coefficient estimate remains similar in the GREG data but becomes somewhat smaller in the Ethnologue data. Hence, all subsequent estimates exploit variation in a sub-sample of countries in which the difference between economic activities in the political leaders' ethnic homelands and elsewhere is relatively modest. If anything, these subsequent estimates are thus rather conservative.

We report the estimates of our main specification, i.e., equation (1), in column (3). The estimated coefficient of interest is 0.068 in the Ethnologue data, 0.074 in the GREG data, and statistically significant in both cases. Hence, ethnographic regions have more intense nighttime light when a member of their ethnic group is the country's political leader than they would have in the counterfactual situation in which the political leader belonged to another ethnic group. We interpret this finding as evidence for ethnic favoritism. We conjecture that ethnic favoritism tends to be less pronounced in the Ethnologue data, in which ethnic groups tend to be more disaggregated, because ethnic favoritism extends to closely related ethnic groups (as shown below).

The remaining columns of Table 3 present various robustness exercises. In column (4) we drop all ethnographic regions with more than one ethnic group and keep only the homogenous ethnographic regions. The coefficient estimates remain similar in the Ethnologue data but become somewhat smaller and less precisely estimated in the GREG data. The reason for the latter is that, in the GREG data, heterogenous ethnographic regions are six to seven times more likely than homogenous regions to host the political leader's ethnic group. In column (5) and (6) we replace the contemporaneous values of $Leader_{ict}$ with their first and second lags to allow for a delayed impact of ethnicity-based policies, e.g., infrastructure projects, on nighttime light intensity. The coefficient estimates become somewhat higher and remain statistically significant. In column (7) we replace $Light_{ict}$ with $Lightpc_{ict}$ to address the possibility that changes in the distribution of nighttime light within countries might be driven by changes in the relative population density. The coefficients of interest remain again similar in magnitude and statistically significant. Finally, in column (8) we drop the region-fixed effects but add the lagged dependent variable, $Light_{ict-1}$.[24] The coefficients of interest drop somewhat but remain statistically significant.

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[24]Our estimates would suffer from the so-called Nickell (1981) bias if we added the lagged dependent variable and kept the region-fixed effects. Angrist and Pischke (2009) therefore propose estimating a specification with fixed effects (but no lagged dependent variable) and one with the lagged dependent variable (but no fixed effects), and document a useful bracketing property of these estimates in case of doubts about the appropriate specification.

These additional estimates and our reliance on two different data sets confirm that ethnographic regions have systematically and robustly more intense nighttime light when being the political leaders' ethnic homelands. It is also remarkable that the coefficient estimates are all in a relatively tight range around the baseline estimates reported in column (3).[25] Equation (1) suggests that being the political leaders' ethnic homelands increases nighttime light intensity by $100(\exp(\gamma) - 1)\%$. Hence, our baseline estimates of 0.068 and 0.074 suggest an increase in nighttime light intensity by 7.0% or 7.7%, respectively. Henderson et al. (2012) report a linear relationship between nighttime light intensity and GDP at the country level and an estimated elasticity of "roughly 0.3." Looking at this relationship at the level of subnational administrative regions, Hodler and Raschky (2014a) also find an elasticity of around 0.3. Assuming that the elasticity is also around 0.3 at the level of subnational ethnographic regions implies that the increase in nighttime light intensity by 7.0%–7.7% corresponds to an increase in GDP by 2.1%–2.3%, which is a fairly sizeable effect.

5.2 Dynamics around ethnic transitions

We next look at the dynamics of nighttime light intensity around ethnic transitions. Doing so is both important and interesting: it is important to address potential endogeneity concerns, and it is interesting to understand whether new political leaders manage to favor their ethnic homelands already right after an ethnic transition, and whether ethnic favoritism can contribute to sustainable development.

We first construct variables indicating ethnographic regions that are the ethnic homelands of political leaders who enter or exit the highest office: we define $Entry_{ict} = 1/n_{ic}$ if there is an ethnic transition in country c in year t and the entering political leader belongs to one of the n_{ic} ethnic groups living in ethnographic region i, and zero otherwise. Similarly, $Exit_{ict} = 1/n_{ic}$ if there is an ethnic transition in country c in year t and the exiting political leader belongs to an ethnic group living in ethnographic region i, and zero otherwise. In columns (1) and (4) of Table 4 we include ethnic transition years and add these two new variables.

Table 4 about here

The estimates in column (1), which are based on the Ethnologue data, suggest that ethnographic regions which are the political leaders' ethnic homelands during parts of the year have more intense nighttime light than if they were not part of the ethnic homelands of

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[25]As a further robustness test, we use GeoEPR, an ethnographic map by Vogt et al. (2015), which provides information on the power status of the politically relevant ethnic groups. We again find a quantitatively similar effect. In addition, we find that this effect is robust to excluding discriminated groups, and that ethnic favoritism expands to junior partners in government, which is consistent with the finding that ethnic favoritism extends to linguistically close groups (see below).

any political leader, but less intense nighttime light than if they were the ethnic home-
lands of a political leader who stayed in power the entire year. The estimates in column
(4), which are based on the GREG data, show the same pattern for ethnographic regions
that are the entering political leaders' ethnic homelands, but suggest that nighttime light
is still as intense in the exiting political leaders' ethnic homelands as it would have been
if this political leader had stayed in power the entire year. Reassuringly, the coefficient
estimates on $Leader_{ict}$ are again similar as in our main specification.

In the remaining columns, we further add variables that capture ethnographic regions
populated by the future political leaders' ethnic group before an ethnic transition or the
past political leaders' ethnic group after an ethnic transition. We define $PreEntry1_{ict} =$
$1/n_{ic}$ ($PreEntry2_{ict} = 1/n_{ic}$) for ethnographic regions that are not the current political
leaders' ethnic homelands but the ethnic homelands of the political leaders entering in
year $t+1$ ($t+2$), and zero otherwise; and $PostExit1_{ict} = 1/n_{ic}$ ($PostExit2_{ict} = 1/n_{ic}$) for
ethnographic regions that are not the current political leaders' ethnic homelands but the
ethnic homelands of the political leaders who exited in year $t-1$ ($t-2$), and zero otherwise.
The coefficient estimates on $PreEntry1_{ict}$ and $PreEntry2_{ict}$ show that nighttime light
does not become more intense in the two years before ethnographic regions become the
political leaders' ethnic homelands. This result seems inconsistent with the idea that a rise
in economic activity simultaneously increases nighttime light intensity and the chances
that an ethnic group gets into power.

The estimates presented in Table 4 are based on ethnic leadership spells of different
length, leading to compositional differences between the ethnographic regions that become
the political leaders' ethnic homelands in two years, one year, or the current year. We
therefore complement Table 4 by focusing on a clearly defined set of ethnic transitions
without any compositional changes. In particular, we identify all ethnic transitions in
which the new political leader's ethnic group was out of power in the five years prior to
the transition year and stayed in power in the five subsequent years. There are only few
countries with such ethnic transitions, and we consider only ethnic transitions between
1997 and 2008 (as we need information on nighttime light intensity in the five years before
and after). We end up with 22 such ethnic transitions in the Ethnologue data and 17
in the GREG data. Figure 1 depicts the development of these political leaders' ethnic
homelands throughout these 11-year time windows (with the variable capturing the very
first year being omitted). Given the few clusters, the standard errors become unreliable,
and we should look primarily at the coefficient estimates. We again see no evidence that
the entering political leaders' ethnic homelands do better before the new political leaders
get into power. Quite to the contrary: it even takes a few years after an ethnic transition
before nighttime light intensity starts increasing.

We now switch our focus to the ethnic homelands of the previous political leaders after
an ethnic transition. The coefficient estimates suggest that nighttime light might still be

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somewhat more intense in the previous political leaders' ethnic homelands in the first year after an ethnic transition but no longer in the second year. This finding strongly suggests that ethnic favoritism does not foster sustainable development. A possible reason could be that most public funds flowing to the political leaders' ethnic homelands are used for consumption purposes rather than investments in infrastructure. Padró i Miquel (2007) presents a theoretical model predicting that the political leader would deliberately refrain from investments in infrastructure, because his co-ethnics are more likely to support him when their benefits depend on his continued presence in power. Another possible reason could be that investments into the political leaders' ethnic homelands do not receive sufficient follow-up funding from successors belonging to rivalling ethnic groups.

5.3 Ethnic and birthplace favoritism

Hodler and Raschky (2014a) find that political leaders favor their birthplaces. Hence, one might be worried that our results could pick up the effect of rather localized birthplace favoritism rather than broader geography-based ethnic favoritism, especially if all political leaders were born in their ethnic homelands. In order to address this concern we combine our data with information on the political leaders' birthplaces.[26] These data show that 22% (in the GREG data) to 26% (in the Ethnologue data) of all domestic-born political leaders were born outside their ethnic homelands. We thus use the birthplace information to determine the ethnographic region in which the political leaders were born. The variable $LeaderBirth_{ict}$ is equal to one if the country's current political leader was born in ethnographic region i, and zero otherwise.

In Table 5, columns (1) and (5), we first re-estimate our main specification after dropping all country-years in which the political leader is foreign-born or his birthplace information missing.

<center>Table 5 about here</center>

The coefficient estimates are similar but somewhat larger than in the full sample. In columns (2) and (6) we replace $Leader_{ict}$, which is based on the political leaders' ethnicities, by $LeaderBirth_{ict}$, which is based on their birthplaces. We find that the coefficient estimates drop and remain at best statistically significant at the 10% level. In columns (3) and (7) we include both variables and find that the coefficient estimates on $Leader_{ict}$ remain large and statistically significant, while those on $LeaderBirth_{ict}$ are considerably smaller and not statistically significant. Hence, ethnic favoritism is more than just a form of birthplace favoritism.[27]

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[26] The birthplace information is an updated version of the data set compiled by Hodler and Raschky (2014a).

[27] These results do not imply that ethnic favoritism is stronger than birthplace favoritism, as birthplace favoritism is unlikely to benefit entire ethnographic regions. Indeed, Hodler and Raschky (2014a) focus on relatively small SN2 regions.

We present complementary evidence in columns (4) and (8). We construct an alternative boundary map for the ethnographic regions. We cut out the SN2 regions in which the political leaders in our sample were born from the respective ethnographic regions. We then recalculate $Light_{ict}$ for these residual ethnographic regions and estimate our main specification using this modified dependent variable. The coefficient estimate of interest increases in magnitude in both data sets. It also remains statistically significant in the GREG data, but not in the Ethnologue data.[28]

These estimates strongly suggest that the ethnic favoritism we uncover is not driven by political leaders favoring their birth regions, and, hence, that ethnic and birthplace favoritism are two distinct phenomena. The difference between these two phenomena is confirmed in the next sections, where we show that ethnic favoritism is present even in democracies and partly motivated by electoral concerns, which contrasts with Hodler and Raschky's (2014a) finding that birthplace favoritism disappears in democracies.

5.4 Ethnic favoritism across the world

So far the literature on ethnic favoritism has focused on African countries, and there has been a preconception that ethnic favoritism is indeed primarily an African phenomenon. Also, ethnic favoritism has been mainly seen as a problem of relatively poor and weakly institutionalized countries. We have a sample with more African countries than previous studies on ethnic favoritism as well as many countries from all other regions of the world. This large and diverse sample allows testing these preconceptions.

In Table 6 we add various interaction terms between our main explanatory variable ($Leader_{ict}$) and potential determinants of ethnic favoritism. These potential determinants include a dummy variable that is equal to one for African countries ($Africa_c$), our measures of country-wide economic development (GDP_{ct}), and the quality of political institutions ($Polity_{ct}$).

Table 6 about here

The coefficient estimates in columns (1) and (6) show that ethnic favoritism is similarly prevalent within and outside of Africa. Hence, the preconception that ethnic favoritism is only an African phenomenon is mistaken. Ethnic favoritism rather seems to be a global axiom of politics. The coefficient estimates in columns (2)–(4) and (7)–(9) suggest that there is a tendency for ethnic favoritism to become less prevalent in more developed and more democratic countries, but these tendencies are not statistically significant in any specification.[29]

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[28]The likely reason for this difference is that the ethnographic regions are on average much smaller in the Ethnologue data, such that we cut out entirely a non-trivial share of ethnographic regions that are ethnic homelands of political leaders.

[29]We have also looked at the effect of ethnic segregation on the prevalence of ethnic favoritism, using

The recent literature on ethnic favoritism in Africa has intensively studied the constraining effects of improvements in political institutions. Franck and Rainer (2012) and Kramon and Posner (2016) find very limited effects of political institutions on ethnic favoritism, while Burgess et al. (2015) find that ethnic favoritism disappears in anocracies and democracies. In columns (5) and (10) we take a closer look at the relationship between political institutions and ethnic favoritism in our global sample. The estimates differ somewhat across data sets, but the following results hold in both: First, the coefficient estimates imply that ethnic favoritism tends to be most prevalent in anocracies, suggesting a potentially non-linear relationship. Second, Wald tests do not allow rejecting the null hypothesis that the coefficients on the three interaction terms are all the same.[30]

The pattern emerging from Table 6 is that ethnic favoritism and, therefore, the salience of ethnic cleavages is a global phenomenon, and that the level of development and the quality of the political institutions have little impact on its prevalence.[31]

5.5   Elections, term limits, and the motives for ethnic favoritism

Given that ethnic favoritism is a general phenomenon, the question arises as to why political leaders tend to favor their co-ethnics. Political leaders could simply be more altruistic towards co-ethnics than towards members of other ethnic groups. Or they could engage in ethnic favoritism for strategic reasons, e.g., to improve their chances of staying in power. In this section, we investigate whether electoral concerns are a key motive for ethnic favoritism. We do so by looking at elections and term limits.

We first look at whether there is more ethnic favoritism around leadership elections. There are various ways by which political leaders could target policies towards their ethnic homelands to improve their reelection chances. First, they could favor their co-ethnics before the election, hoping that doing so will increase turnout and reduce the support for opposition candidates in their ethnic homelands. In this case, we might observe an increase in nighttime light intensity in the election year or even the year before. Second, political leaders could promise to their co-ethnics that they will reward electoral support with favorable policies after the election. In this case, we would observe an increase in

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the index of ethnic segregation by Alesina and Zhuravskaya (2011). As one may expect, the coefficient estimate on the interaction term between $Leader_{ict}$ and this index is positive, implying that ethnic favoritism tends to be more prevalent in more ethnically segregated societies. The coefficient is however not statistically significant at conventional levels, which may be due to the fact that this index of ethnic segregation is only available for 86 (84) countries from our Ethnologue (GREG) data.

[30]We also follow Burgess et al. (2014) in putting democracies and anocracies into one category, which we call $NoAutocracy_{ct}$. In both data sets, the coefficients on $Leader_{ict} \times NoAutocracy_{ct}$ are positive and statistically significantly different from zero (at the 5% level) but not statistically significantly different from the coefficients on $Leader_{ict} \times Autocracy_{ct}$.

[31]In the Online Appendix we further document that the extent of ethnic favoritism is by and large independent of the geography in the political leaders' ethnic homelands, but tends to decrease in the historical political centralization of the political leaders' ethnic groups. The latter result is consistent with the notion that better historical institutions may map into a less tribal conception of politics.

nighttime light intensity after the election.

In columns (1) and (5) of Table 7 we add to our main specification interaction terms between $Leader_{ict}$ and lag, contemporaneous, and lead values of $Election_{ct}$, which indicates whether there is an election in which the office of the incumbent political leader is contested.

<div align="center">Table 7 about here</div>

The coefficient estimates on all these interactions terms are positive in both data sets, but the exact pattern differs somewhat across data sets. The Ethnologue-based estimates suggest that the political leaders' ethnic homelands benefit mainly in the election year and the year thereafter, while the GREG-based estimates suggest that they benefit primarily prior to the election. These results could however be driven by differences between countries with and without leadership elections, and differences between more and less experienced political leaders, as most political leaders facing a leadership election have been in power for at least 3 years. In columns (2) and (6) we therefore add as control variables interaction terms between $Leader_{ict}$, on the one hand, and a time-invariant dummy variable capturing whether there was at least one leadership election during the sample period, labeled $Elections_c$, and the political leaders' years in office up to year t, labeled $Experience_{ct}$, on the other hand. The coefficient estimates on the interaction terms of interest confirm the pattern found in columns (1) and (5).[32] These findings suggest that electoral concerns are indeed an important motive for ethnic favoritism.[33]

We now turn to comparing political leaders who are in their last term, as they face binding term limits, with political leaders who do not face binding term limits. This comparison may be useful to learn about the political leaders' motives. Finding less ethnic favoritism for term-limited political leaders would support the notion that electoral concerns play an important role. Finding more ethnic favoritism for term-limited political leaders would be consistent with ethnicity-based altruism as a key motive.[34] Finally, there are good reasons to expect no clear relationship between term limits and ethnic favoritism. Term-limited political leaders may have strong preference for securing a co-ethnic as future leader to maximize their future expected payoffs in countries featuring ethnic politics. Moreover, term-limited political leaders may compensate the decrease in distortions with an increase in corruption, as suggested by Finan and Mazzoco (2016).

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[32]Columns (2) and (6) further show that ethnic favoritism increases with the political leaders' experience, but is independent of whether or not there are leadership elections in a country. The reason for the latter finding is most likely that the set of countries without leadership elections include autocracies (e.g., Libya) as well as democracies (e.g., Switzerland).

[33]Focusing on Africa, Eifert et al. (2010) find that the people's ethnic attachment increases in the period around executive elections. This increase may well result from the increase in ethnic favoritism in this period.

[34]Political leaders with altruistic preferences towards their co-ethnics would want to favor their ethnic homeland in all terms, but might refrain from doing so when reelections keep them accountable to the population at large. They would however choose policies according to their own preferences when the term limit becomes binding (e.g., Besley and Coate, 2003, Besley, 2006).

In columns (3) and (7) we add to our main specification an interaction term between $Leader_{ict}$ and the dummy variable $Termlimited_{ct}$. The coefficient estimates on this interaction term are not statistically significant. In columns (4) and (8) we allow for the possibility that there are important differences between countries with and without constitutional term limits, or between more and less experienced political leaders. We add interaction terms between $Leader_{ict}$, on the one hand, and $Experience_{ct}$ and a time-invariant dummy variable capturing whether there was at least one term-limited political leader during our sample period, labeled $Termlimits_c$, on the other hand. The coefficient estimates of interest are again not statistically significant, but suggest that term-limited political leaders tend to engage in more ethnic favoritism than reelectable political leaders with similar experience in countries with term limits.[35]

To summarize, there is considerable evidence that elections matter for ethnic favoritism. At the same time, we do not find that political leaders facing term limits reduce ethnic favoritism. This finding suggests that ethnicity-based altruism may be an important motive. It is also consistent with the notion that term-limited political leaders care about the electoral prospect of their preferred co-ethnic candidate or that they compensate distorted policies with higher corruption, with the spoils ending up in their ethnic homeland.

5.6   The role of ethnic parties

Given that the motives for ethnic favoritism include electoral concerns and possibly also ethnicity-based altruism, we conjecture that the presence of ethnic parties facilitates ethnic favoritism or even increases the voters' demand for it. In this section we shed light on how the presence of ethnic parties affect ethnic favoritism.

We use three different measures on the prevalence of ethnic parties. The first is the cumulative vote shares of ethnic parties in the first election after 1991 ($EthnicShare_c$). We interact this measure with our main explanatory variable ($Leader_{ict}$) in columns (1) and (5) of Table 8.

<div align="center">Table 8 about here</div>

The coefficient estimate on this interaction term is positive and statistically significant at the 10% level in the Ethnologue data, but not the GREG data. This estimate provides some evidence that ethnic parties could facilitate ethnic favoritism.

In columns (2) and (5) we use the party voting fractionalization index ($EthnicPVF_c$). The coefficient estimates on the respective interaction term are positive, but not statis-

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[35]In the Online Appendix, we combine these two approaches and study whether the effects of elections on the extent of ethnic favoritism differs between elections in which the political leader has reached his term limit and elections in which he could run for reelection. We find no evidence for such a difference.

tically significant, providing some indication that the presence of many parties with an ethnically homogeneous pool of voters tends to be associated with higher ethnic favoritism.

In columns (3) and (7) we use the share of Afrobarometer respondents who consider the ethnicity of the party leaders or members to be the main difference between the ruling party and the opposition parties ($EthnicParticipation_c$). This share directly measures whether the main parties are perceived as ethnic parties by the people. We find a strong positive effect of this perception on ethnic favoritism in both data sets. This result strongly suggests that the presence of ethnic parties is conducive to ethnic favoritism, at least in Africa.

As each of these three measures of ethnic parties is only available for a subset of the countries in our samples, we also use an alternative proxy for the importance of ethnic parties that is available for most countries. In particular, we look at whether ethnic favoritism is less prevalent in countries where no single ethnic group constitutes a majority compared to countries where an ethnic majority group exists. The idea is that ethnic parties should play a less important role if an ethnic majority group exists: First, political leaders from a minority group would typically be ill-advised to make ethnic cleavages salient before an upcoming election in these countries. Second, political leaders from the majority group often run against candidates from the same group, such that focusing on ethnic cleavages might not typically improve (re)election chances. We set $NoMajority_c$ to one if there exists no ethnic group to which more than 50% of the population belong, and to zero otherwise. To ensure consistency with our ethnographic maps, we use data on the size of ethnic groups from Ethnologue and the classical Soviet Atlas Narodov Mira, respectively.[36] The coefficient estimates reported in columns (4) and (8) indeed suggest that ethnic favoritism tends to be more prevalent in countries with no ethnic majority group, but these estimates are not statistically significant.

The pattern emerging from the use of our various measures on the prevalence of ethnic parties is consistent with the notion that ethnic parties facilitate ethnic favoritism.

5.7 Exploiting linguistic distances

We finally exploit the fact that Ethnologue provides a linguistic tree indicating the relation between all ethnolinguistic groups.[37] We construct the linguistic distance between any two ethnic groups following the approach by Putterman and Weil (2010) and focus on the linguistic distance of any ethnic group from the ethnic group of the country's current

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[36]The Ethnologue data on the size of ethnic groups refer to recent years. The GREG/Atlas Narodov Mira population estimates refer to 1959–1961, such that $NoMajority_c$ is unavailable for countries that have partitioned since the 1960s.

[37]We thank Stelios Michalopoulos for suggesting this extension at the NBER 2015 Political Economy Workshop.

political leader.[38] In our sample, the average linguistic distance from the political leader's ethnicity is 0.59 (with a standard deviation of 0.39). We construct dummy variables representing various ranges of this distance: $DistanceX_{ict} = 1$ if the linguistic distance is between $(X-1)/10$ and $X/10$ for $X = \{0, 1, 2, ..., 5\}$.

We use these dummy variables as explanatory variables in column (1) of Table 9.

Table 9 about here

These estimates are interesting for various reasons. First, they show that the extent to which political leaders support their ethnic homelands is larger than the main specification implies. In particular, the coefficient estimate on $Distance0_{ict}$ of 0.100 implies that the ethnic homelands of the political leaders have 10.5% more intense nighttime light and 3.2% more economic activity than they would have in a counterfactual situation of a political leader with a linguistic distance larger than 0.5. Second, the estimates show that ethnic favoritism extends to linguistically close groups. In particular, the coefficient estimates on $Distance1_{ict}$ and $Distance2_{ict}$ are still relatively large. This pattern strengthens our claim that omitted-variable concerns are not driving our estimates. The major endogeneity concern is that new political leaders may come from ethnographic regions that have become more economically active in recent years. We have shown in section 5.2 that the nighttime light dynamics around ethnic transitions do not support this scenario. Complementarily, the finding that linguistically close groups benefit also does not support this scenario, as it seems even less likely that political leaders get into power because linguistically close groups have become economically more active.

We next separate the effects in years around elections and in other years. More specifically, we replace all the distance variables with the interaction terms of these variables with $Election3_{ct}$, which is equal to one if there is a leadership election in the previous, the current or the next year, as well as with $(1 - Election3_{ct})$. We report the coefficient estimates on these interaction terms in columns (2a) and (2b), respectively. We find that ethnic favoritism towards the ethnic homelands of linguistically relatively close groups also increases during the election season, providing further evidence that electoral concerns are an important motive for ethnic favoritism.

6   Conclusions

Motivated by the questions whether, where, and when ethnic favoritism is an axiom of politics, we have presented a novel approach to study the prevalence and determinants

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[38]In a linguistic tree, each language is characterized by a series of nodes. Putterman and Weil (2010, Appendix C) define the linguistic distance between any pair of languages i, j as $1 - \sqrt{2m_{i,j}^c/(m_i + m_j)}$, where m_i is the number of nodes of language i, and $m_{i,j}^c$ the number of common nodes of languages i and j.

of ethnic favoritism. Unlike the previous literature, we have studied ethnic favoritism at the global level using two panel data sets with several thousand subnational ethnographic regions from around 140 multi-ethnic countries. Moreover, we have taken seriously Kramon and Posner's (2013) warning against generalizations based on findings for a single policy area and used an output measure – nighttime light intensity – that captures the aggregate distributional effect of a wide range of policies. We find strong evidence for ethnic favoritism: ethnographic regions enjoy on average 7%–10% higher nighttime light intensity and 2%–3% higher GDP when being the political leader's ethnic homeland.

Thanks to our large and diverse sample, we have gained interesting new insights into the prevalence and determinants of ethnic favoritism. First, even though ethnic favoritism is prevalent in Africa, it is not just an African axiom of politics. It is a global axiom of politics, which is prevalent within and outside of Africa and in poor as well as rich countries. Second, the constraining effects of sound political institutions are limited. Hence, democratization is in general no panacea for curbing ethnic favoritism. Third, electoral concerns and ethnic parties contribute to ethnic favoritism, which may explain why democratization is no panacea. Finally, the regional economic benefits of ethnic favoritism are just temporary. Hence, ethnic favoritism does not contribute to sustainable development.

At first glance, these findings draw a rather pessimistic picture. However, future research exploring different mechanisms by which political institutions may impact on ethnic favoritism could lead to more insights and point towards possible policy interventions that may help to curb ethnic favoritism. We are confident that our novel approach relying on satellite data of nighttime light intensity and ethnographic regions from many countries from all over the world can be usefully employed to tackle these and other questions.[39]

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[39]Dickens (2016) and Mueller and Tapsoba (2016) already apply our novel approach in their recent working papers.

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Tables

Table 1: Summary statistics

Variable	Observations	Mean	Standard Deviation (overall, between, within)	Min.	Max.
			A. Ethnologue		
$Light_{ict}$	147,825	-2.50	2.48, 2.37, 0.66	-4.61	4.14
$Leader_{ict}$	147,825	0.05	0.17, 0.16, 0.06	0	1
GDP_{ct}	120,541	7.98	1.24, 1.20, 0.30	5.29	11.16
$Polity_{ct}$	141,164	0.65	0.30, 0.25, 0.15	0	1
$TermLimited_{ct}$	124,395	0.13	0.34, 0.30, 0.12	0	1
$Election_{ct}$	135,050	0.16	0.36, 0.08, 0.36	0	1
$EthnicShare_c$	94,286	0.18	0.26, 0.26, 0.00	0	1
$EthnicPVF_c$	57,224	0.17	0.13, 0.13, 0.00	0	0.46
$EthnicPerception_c$	35,944	0.04	0.03, 0.03. 0.00	0.00	0.13
			B. GREG		
$Light_{ict}$	41,416	-1.50	2.37, 2.30, 0.59	-4.61	4.08
$Leader_{ict}$	41,416	0.14	0.29, 0.27, 0.09	0	1
GDP_{ct}	35,700	8.27	1.15, 1.13, 0.27	5.29	10.88
$Polity_{ct}$	39,546	0.63	0.32, 0.29, 0.13	0	1
$TermLimited_{ct}$	35,109	0.13	0.33, 0.30, 0.11	0	1
$Election_{ct}$	37,487	0.17	0.38, 0.08, 0.37	0	1
$EthnicShare_c$	23,822	0.17	0.27, 0.27, 0.00	0	1
$EthnicPVF_c$	15,023	0.13	0.12, 0.12, 0.00	0	0.46
$EthnicPerception_c$	7,701	0.04	0.03, 0.03, 0.00	0.00	0.13

Notes: Summary statistics based on annual data for ethnographic regions from 1992-2013, based on the Ethnologue and the GREG sample used in our main specification (Table 3, column (3)).

Table 2: Information on countries with ethnic transitions

	(1) Countries	(2) Leadership transitions	(3) Ethnic transitions	(4) GDP_{ct}	(5) $Polity_{ct}$	(6) Ethnographic regions
			A. Ethnologue			
Entire sample	141	4.05 (3.0)	1.09 (0.0)	8.44 (8.31)	0.67 (0.75)	54.28 (13.0)
Countries with ethnic transitions	52	4.17 (3.0)	2.96 (2.0)	7.83 (7.46)	0.66 (0.70)	85.37 (31.5)
in Africa	28	3.39 (3.0)	2.79 (2.0)	7.00 (6.98)	0.56 (0.60)	59.79 (35.5)
elsewhere	24	5.08 (4.0)	3.17 (2.0)	8.51 (8.58)	0.78 (0.86)	115.21 (12.5)
			B. GREG			
Entire sample	137	4.22 (3.0)	0.99 (0.0)	8.40 (8.31)	0.66 (0.74)	14.83 (9.0)
Countries with ethnic transitions	45	4.51 (3.0)	3.02 (2.0)	7.82 (7.60)	0.64 (0.64)	18.42 (13.0)
in Africa	25	3.20 (3.0)	2.44 (2.0)	7.05 (7.05)	0.54 (0.55)	13.56 (12.0)
elsewhere	20	6.15 (4.0)	3.75 (2.5)	8.81 (8.58)	0.77 (0.85)	24.50 (15.5)

Notes: Table is based on our data on political leaders for 1992–2013. Column (1) indicates the number of countries in the respective sample. Column (2) indicates the average (median) number of leadership transitions in the respective sample. Column (3) indicates the average (median) number of leadership transitions associated with a change in the political leader's ethnicity in the respective sample. Column (4) and (5) indicate the average (median) values of GDP_{ct} and $Polity_{ct}$ in the respective sample (see main text for the definitions of GDP_{ct} and $Polity_{ct}$). Column (6) indicates the average (median) number of ethnographic regions in the countries of the respective sample according to the respective ethnographic map.

Table 3: Ethnic favoritism: Baseline results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				A. Ethnologue				
$Leader_{ict}$	1.319***	0.921*	0.068***	0.070**			0.070***	0.061***
	(0.278)	(0.500)	(0.022)	(0.030)			(0.023)	(0.021)
$Leader_{ict-\tau}$					0.072***	0.088***		
					(0.022)	(0.022)		
$Light_{ict-1}$								0.948***
								(0.005)
Region fixed effects	no	no	yes	yes	yes	yes	yes	no
Country-year dummy variables	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.468	0.382	0.265	0.265	0.267	0.267	0.202	0.941
Observations	147,825	77,603	147,825	115,279	147,617	147,208	147,825	141,394
Number of countries	141	52	141	141	141	141	141	141
				B. GREG				
$Leader_{ict}$	1.648***	1.605***	0.074**	0.047			0.067**	0.051***
	(0.158)	(0.331)	(0.029)	(0.031)			(0.029)	(0.007)
$Leader_{ict-\tau}$					0.082***	0.096***		
					(0.028)	(0.029)		
$Light_{ict-1}$								0.967***
								(0.003)
Region fixed effects	no	no	yes	yes	yes	yes	yes	no
Country-year dummy variables	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.524	0.439	0.490	0.497	0.492	0.492	0.421	0.968
Observations	41,416	15,290	41,416	30,884	41,284	40,961	41,416	39,544
Number of countries	137	43	137	137	137	137	137	137
Dependent variable	$Light_{ict}$	$Light_{ict}$	$Light_{ict}$	$Light_{ict}$	$Light_{ict}$	$Light_{ict}$	$Lightpc_{ict}$	$Light_{ict}$
Lagged explanatory variable	no	no	no	no	$\tau = 1$	$\tau = 2$	no	no
Sample restriction	no	Ethnic transitions	no	Homogenous regions	no	no	no	no

Notes: Columns (3)-(7) report fixed effect estimates, and columns (1), (2) and (8) standard OLS estimates using annual data for ethnographic regions of multi-ethnic countries (according to the respective ethnographic map) from 1992–2013, excluding country-years with ethnic transitions. Dependent variable is $Light_{ict}$, except in column (7) where it is $Lightpc_{ict}$. Column (2) excludes countries without ethnic transitions, and column (4) ethnographic regions with more than one ethnic group. Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Table 4: Transitional dynamics

	Ethnologue			GREG		
	(1)	(2)	(3)	(4)	(5)	(6)
$PreEntry2_{ict}$			-0.040			0.010
			(0.081)			(0.030)
$PreEntry1_{ict}$		-0.046	-0.019		0.001	0.006
		(0.062)	(0.048)		(0.029)	(0.034)
$Entry_{ict}$	0.024	0.025	0.035	0.014	0.024	0.027
	(0.026)	(0.031)	(0.038)	(0.029)	(0.034)	(0.038)
$Leader_{ict}$	0.059**	0.061**	0.062*	0.076***	0.087***	0.094***
	(0.024)	(0.026)	(0.031)	(0.028)	(0.030)	(0.032)
$Exit_{ict}$	0.029	0.032	0.037	0.060*	0.070*	0.094**
	(0.027)	(0.032)	(0.036)	(0.034)	(0.040)	(0.043)
$PostExit1_{ict}$		-0.007	-0.019		0.033	0.017
		(0.047)	(0.053)		(0.038)	(0.044)
$PostExit2_{ict}$			-0.042			0.019
			(0.043)			(0.028)
Region fixed effects	yes	yes	yes	yes	yes	yes
Country-year dummy variables	yes	yes	yes	yes	yes	yes
R-squared	0.259	0.259	0.257	0.490	0.490	0.481
Observations	162,083	161,916	152,370	43,670	43,651	41,299
Number of countries	141	141	141	137	137	137

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to the respective ethnographic map) from 1992–2013. Dependent variable is $Light_{ict}$. Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Table 5: Ethnic favoritism is not birthplace favoritism

	Ethnologue				GREG			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Leader_{ict}$	0.074**		0.064**	0.078	0.086***		0.081**	0.092***
	(0.031)		(0.032)	(0.052)	(0.029)		(0.033)	(0.027)
$LeaderBirth_{ict}$		0.042*	0.027			0.036	0.011	
		(0.025)	(0.026)			(0.029)	(0.033)	
Region fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Country-year dummy variables	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.260	0.260	0.260	0.259	0.480	0.480	0.480	0.478
Observations	137,161	137,161	137,161	134,642	39,189	39,189	39,189	38,971
Number of countries	139	139	139	139	136	136	136	136
SN2 birth regions clipped	no	no	no	yes	no	no	no	yes

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to the respective ethnographic map) from 1992–2013, excluding country-years with ethnic transitions or with political leaders whose birth place were abroad or are unknown. Dependent variable is $Light_{ict}$, but in columns (4) and (8) the SN2 birth regions of all political leaders during our sample period are dropped from the respective ethnographic regions before calculating average regional nighttime light intensity (see text for details). Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Table 6: Ethnic favoritism across the world

	Ethnologue					GREG				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$Leader_{ict}$	0.060***	0.363	0.096	0.453		0.079*	0.199	0.138*	0.182	
	(0.018)	(0.263)	(0.082)	(0.381)		(0.043)	(0.269)	(0.078)	(0.445)	
$Leader_{ict} \times Africa_c$	0.020			-0.053		-0.010			-0.027	
	(0.047)			(0.078)		(0.058)			(0.105)	
$Leader_{ict} \times GDP_{ct}$		-0.038		-0.045			-0.016		-0.000	
		(0.034)		(0.048)			(0.035)		(0.052)	
$Leader_{ict} \times Polity_{ct}$			-0.050	-0.033				-0.103	-0.128	
			(0.101)	(0.113)				(0.104)	(0.110)	
$Leader_{ict} \times Democracy_{ct}$					0.051**					0.029
					(0.024)					(0.036)
$Leader_{ict} \times Anocracy_{ct}$					0.088					0.127**
					(0.058)					(0.061)
$Leader_{ict} \times Autocracy_{ct}$					0.043					0.116
					(0.080)					(0.075)
Region fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country-year dummy variables	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.265	0.262	0.264	0.261	0.264	0.490	0.470	0.491	0.469	0.491
Observations	147,825	120,541	141,164	115,137	141,164	41,416	35,700	39,546	34,442	39,546
Number of countries	141	131	134	125	134	137	127	131	122	131

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to the respective ethnographic map) from 1992–2013, excluding country-years with ethnic transitions. Dependent variable is $Light_{ict}$. Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Table 7: Elections, term limits and ethnic favoritism

	Ethnologue				GREG			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Leader_{ict}$	0.052**	-0.036	0.065***	0.064**	0.067**	0.046	0.070**	0.034
	(0.025)	(0.069)	(0.025)	(0.029)	(0.034)	(0.031)	(0.031)	(0.036)
$Leader_{ict} \times Election_{ct+1}$	0.020	0.017			0.031*	0.029*		
	(0.016)	(0.016)			(0.017)	(0.017)		
$Leader_{ict} \times Election_{ct}$	0.031*	0.028*			0.016	0.014		
	(0.017)	(0.017)			(0.021)	(0.022)		
$Leader_{ict} \times Election_{ct-1}$	0.045**	0.047**			0.016	0.024		
	(0.019)	(0.021)			(0.020)	(0.020)		
$Leader_{ict} \times Elections_c$		0.081				-0.023		
		(0.073)				(0.045)		
$Leader_{ict} \times TermLimited_{ct}$			0.059	0.127			0.021	0.069
			(0.120)	(0.161)			(0.054)	(0.054)
$Leader_{ict} \times TermLimits_c$				-0.155				-0.078
				(0.120)				(0.082)
$Leader_{ict} \times Experience_{ct}$		0.003		0.003		0.008*		0.008**
		(0.004)		(0.004)		(0.004)		(0.003)
Region fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Country-year dummy variables	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.239	0.239	0.268	0.268	0.453	0.453	0.481	0.481
Observations	127,913	127,913	124,395	124,395	35,621	35,621	35,109	35,109
Number of countries	136	136	131	131	133	133	130	130

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to the respective ethnographic map) from 1992–2013, excluding country-years with ethnic transitions. Dependent variable is $Light_{ict}$. Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Table 8: Ethnic parties and ethnic favoritism

	Ethnologue				GREG			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Leader_{ict}$	0.018	-0.028	-0.060	0.015	0.087	0.048	-0.065	0.055
	(0.033)	(0.044)	(0.061)	(0.036)	(0.058)	(0.070)	(0.044)	(0.065)
$Leader_{ict} \times EthnicShare_{ct}$	0.169*				-0.030			
	(0.090)				(0.114)			
$Leader_{ict} \times EthnicPVF_{ct}$		0.195				0.126		
		(0.144)				(0.357)		
$Leader_{ict} \times EthnicPerception_{ct}$			2.339**				2.240***	
			(1.078)				(0.451)	
$Leader_{ict} \times NoMajority_{ct}$				0.069				0.043
				(0.044)				(0.072)
Region fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Country-year dummy variables	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.238	0.230	0.185	0.265	0.476	0.411	0.422	0.498
Observations	94,286	57,224	35,944	147,825	23,822	15,023	7,701	36,566
Number of countries	96	41	29	141	94	39	28	114

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to the respective ethnographic map) from 1992–2013, excluding country-years with ethnic transitions. Dependent variable is $Light_{ict}$. Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Table 9: Ethnic favoritism and linguistic distances

	Ethnologue		
	(1)	(2a)	(2b)
Interacted with:	–	$Election3_{ct}$	$(1 - Election3_{ct})$
$Distance0_{ict}$	0.100***	0.117***	0.090**
	(0.035)	(0.035)	(0.039)
$Distance1_{ict}$	0.078*	0.086**	0.063
	(0.040)	(0.038)	(0.041)
$Distance2_{ict}$	0.063*	0.090***	0.049
	(0.030)	(0.032)	(0.037)
$Distance3_{ict}$	0.034	0.066	0.043
	(0.044)	(0.042)	(0.046)
$Distance4_{ict}$	0.039	0.065	0.013
	(0.040)	(0.040)	(0.048)
$Distance5_{ict}$	0.015	0.009	-0.013
	(0.032)	(0.033)	(0.034)
Region fixed effects	yes	yes	
Country-year dummy variables	yes	yes	
R-squared	0.265	0.239	
Observations	147,825	127,913	
Number of countries	141	136	

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to Ethnologue) from 1992–2013, excluding country-years with ethnic transitions. Dependent variable is $Light_{ict}$. Columns (2a) and (2b) report coefficient estimates on different interaction terms from the same regression. Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Figures

Figure 1: Time windows around ethnic transitions
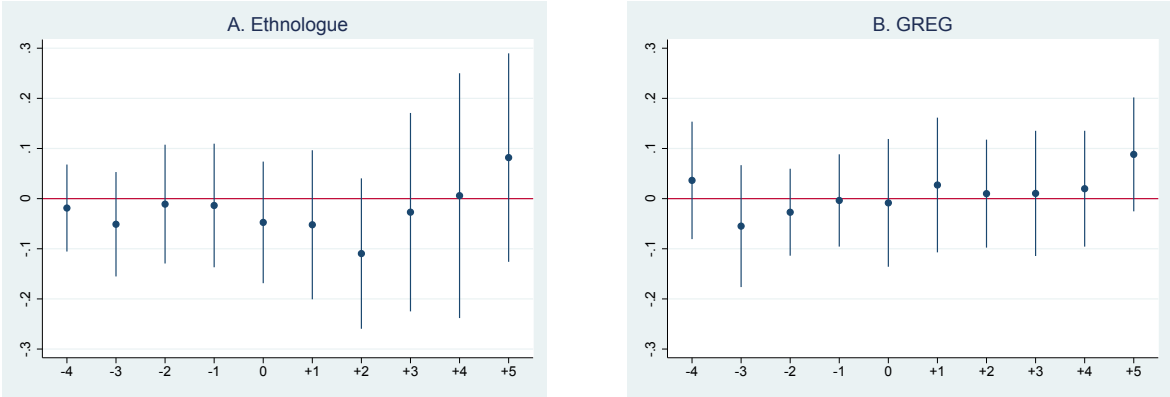
Notes: Figures are based on 11-year time windows around ethnic transitions in which the new political leader is from an ethnic group that was out of power in the previous five years and stayed in power in the subsequent five years. The coefficient estimates indicate his ethnic homeland in the years prior to the ethnic transition (-4,-3,-2,-1, with -5 being omitted), the year of the ethnic transition (0), and the years thereafter (+1,+2,+3,+4,+5). The estimates include region-fixed effects and country-year dummy variables. Standard errors are adjusted for clustering at the country level. Vertical lines indicate 95% confidence intervals.

Online Appendix

A.1 Demography, geography and ethnic favoritism

This appendix shows whether and how the extent of ethnic favoritism depends on demographic and geographic characteristics of the political leaders' ethnic homelands. The motivation is that certain geographic characteristics may impact the willingness or the ability of political leaders to target policies towards their ethnic homeland. We therefore want to compare the extent of ethnic favoritism in flat, fertile, densely populated versus rugged, infertile, thinly populated ethnic homelands as well as ethnic favoritism in homelands close versus far from the capital or the coast. For that purpose, we build a number of interaction terms between our main explanatory variable ($Leader_{ict}$) and the following ethnic homeland-specific demographic and geographic characteristics:

- Population Density: The log of the number of people per km2. Population data stems from the Gridded Population of the World, version 3 (CIESIN 2016).

- Capital: A dummy variable that indicates whether the capital of country c is located in ethnic homeland i. Information about the coordinates of a country's capital is taken from Weidmann et al. (2010).

- Distance to Capital: The log of the distance between the ethnic homeland's geographic center and the country's capital in km. The ethnic homeland's centroid were calculated by the authors. Information about the coordinates of a country's capital is taken from Weidmann et al. (2010).

- Distance to the Coast: The log of the distance between the ethnic homeland's geographic center and the nearest coast line in km. The ethnic homeland's centroid were calculated by the authors. Vector data on the world's shorelines stems from Wessel and Smith (1996).

- Elevation: We used data from GTOPO30, which is a global digital elevation model (DEM) with a horizontal grid spacing of 30 arc seconds (approximately 1 kilometer), to calculate each ethnic homeland's average elevation in 1000m. These data are distributed by the Land Processes Distributed Active Archive Center (LP DAAC), located at USGS/EROS.

- Ruggedness: We used data from GTOPO30 to calculate the Mean Terrain Roughness Index. This index reflects the average absolute height difference between a raster pixel and its neighbors and is normalized to 0-1. The raw data are obtained by the Land Processes Distributed Active Archive Center (LP DAAC), located at USGS/EROS.

- Agricultural Suitability: Average land suitability for agriculture within each ethnic homeland. The index calculates land suitability for cultivation based on climate and soil constraints. The original raster data does not provide complete coverage of the globe's land area (for example, it does not cover some peninsulas and islands). This variable is therefore missing for some observations. The raw raster data comes from Ramankutty et al. (2002).

Table A1 presents the descriptive statistics of these demographic and geographic variables for the Ethnologue and the GREG data set. Tables A2 and A3 present the coefficient estimates on the interaction terms between $Leader_{ict}$ and these demographic and geographic variables for both data sets. Most demographic and geographic characteristics do not seem to have an effect on the extent of ethnic favoritism, except that there tends to be more ethnic favoritism if the political leader's ethnic homeland has high altitude and non-rugged terrain.

A.2 Historical political centralization and ethnic favoritism

This appendix shows whether and how the extent of ethnic favoritism depends on an ethnic group's historical political centralization. Murdock (1969) provides a commonly used measure of pre-colonial/historical political centralization. Among others, Michalopoulos and Papaioannou (2013) use it to look at differences across ethnic homelands in Africa. Unfortunately, ethnographic maps featuring the same ethnicities as the Murdock data on historical political centralization are only available for Africa, while we are interested in the role of historical political centralization at a global level. We therefore match the ethnic groups in Murdock to those in Ethnologue as well as to those in GREG. We thereby restrict ourselves to countries with ethnic transitions, i.e., countries that had political leaders from more than one ethnic groups during the sample period.[40] Once the ethnic groups in Murdock (1969) are matched to those in our two data sets, we can assign Murdock's categories for historical political centralization to the political leaders' ethnic groups in our two data sets. These categories are (in increasing order of political centralization): stateless societies without any centralized political organization, petty chiefdoms, large chiefdoms, small states, and large states. Following Michalopoulos and Papaioannou (2013), we define an ordered variable, ranging from 0 (stateless societies) to 4 (large states) as well as a dummy variable that is equal to one for large chiefdoms and states, and zero otherwise. We call these variables $Centralization(ordered)_{ct}$ and $Centralization(dummy)_{ct}$, respectively.

Table A4 presents our estimates. Odd columns make use of all country-years for which we have the historical political centralization of the political leader's ethnic group,

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[40]These countries identify the effect of interaction terms between $Leader_{ict}$ and measures of historical political centralization, as such interaction terms are time-invariant in countries without ethnic transitions.

while even columns restrict the sample to those countries for which we have the historical political centralization of all political leaders throughout the sample period. The results – especially those based on the Ethnologue data – suggest that political leaders from ethnic groups with higher historical political centralization engage less in ethnic favoritism. This finding is in line with the notion that better historical institutions may map into a less tribal conception of politics.

A.3 Elections with term-limited leaders and ethnic favoritism

Section 5.5 shows how leadership elections and term limits affect the extent of ethnic favoritism. In this appendix, we go one step further and look at term limits and election years jointly. We rely again on the National Elections Across Democracy and Autocracy (NELDA) database. We code the dummy variable $ElectionTL_{ct}$ to be equal to one for the country-years in which a leadership election took place *and* the incumbent political leader could not run for reelection due to binding term limits, and zero otherwise. We further code the time-invariant dummy variable $ElectionsTL_c$ to be equal to one for all countries in which there was at least one leadership election with a term-limited political leader during our sample period.

In Table A5 we present the same specifications as in columns (1)-(2) and (5)-(6) of Table 7, but with interaction terms between $Leader_{ict}$, on the one hand, and lag, contemporaneous, and lead values of $ElectionTL_{ct}$ as well as $ElectionsTL_c$, on the other hand. The coefficient estimates on all these newly added interaction terms are statically insignificant. Hence, we find no evidence that the extent of ethnic favoritism in election years differs depending on whether or not the incumbent political leader is term-limited.

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Table A1: Summary statistics for demographic and geographic variables

Variable	Observations	Mean	Std. Dev.	Min.	Max.
	A. Ethnologue				
$PopDensity_{ict}$	147,825	3.30	1.68	0.00	10.37
$Capital_{ic}$	147,825	0.02	0.14	0.00	1.00
$DistCapital_{ic}$	147,825	6.35	1.08	0.59	8.95
$DistCoast_{ic}$	147,825	11.88	1.84	2.28	14.77
$Elevation_{ic}$	147,803	0.68	0.76	-1.15	5.69
$Ruggedness_{ic}$	147,803	0.11	0.13	0.00	0.99
$AgriSuitability_{ic}$	139,144	0.41	0.27	0.00	1.00
	B. GREG				
$PopDensity_{ict}$	41,416	3.34	1.61	0.00	8.72
$Capital_{ct}$	41,416	0.04	0.17	0.00	1.00
$DistCapital_{ic}$	41,416	6.29	1.10	1.38	8.96
$DistCoast_{ic}$	41,416	12.21	1.67	3.44	14.76
$Elevation_{ic}$	41,416	0.68	0.74	-0.07	4.86
$Ruggedness_{ic}$	41,416	0.13	0.14	0.00	0.91
$AgriSuitability_{ic}$	39,964	0.39	0.26	0.00	0.99

Notes: Summary statistics based on annual data for ethnographic regions from 1992–2013, based on the Ethnologue and the GREG sample used in Tables A2 and A3.

Table A2: Demography, geography and ethnic favoritism (Ethnologue)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Leader_{ict}$	0.241	0.066***	0.198	0.236	0.045	0.102***	0.141**
	(0.153)	(0.024)	(0.146)	(0.224)	(0.039)	(0.028)	(0.057)
$Leader_{ict} \times PopDensity_{ict}$	-0.041						
	(0.036)						
$Leader_{ict} \times Capital_{ic}$		0.016					
		(0.063)					
$Leader_{ict} \times DistCapital_{ic}$			-0.023				
			(0.025)				
$Leader_{ict} \times DistCoast_{ic}$				-0.014			
				(0.018)			
$Leader_{ict} \times Elevation_{ic}$					0.029		
					(0.032)		
$Leader_{ict} \times Ruggedness_{ic}$						-0.336**	
						(0.143)	
$Leader_{ict} \times AgriSuitability_{ic}$							-0.179
							(0.128)
Region fixed effects	yes	yes	yes	yes	yes	yes	yes
Country-year dummy variables	yes	yes	yes	yes	yes	yes	yes
R-squared	0.265	0.265	0.265	0.265	0.265	0.265	0.275
Observations	147,825	147,825	147,825	147,825	147,803	147,803	139,144
Countries	137	137	137	137	137	137	137

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to the Ethnologue) from 1992–2013, excluding country-years with ethnic transitions. Dependent variable is $Light_{ict}$. Column (1) includes $PopDensity_{ict}$ as control variable (coefficient not reported). Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Table A3: Demography, geography and ethnic favoritism (GREG)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Leader_{ict}$	0.093	0.088**	0.065	-0.034	0.027	0.108***	0.151**
	(0.084)	(0.035)	(0.166)	(0.253)	(0.038)	(0.036)	(0.068)
$Leader_{ict} \times PopDensity_{ict}$	-0.005						
	(0.020)						
$Leader_{ict} \times Capital_{ic}$		-0.114					
		(0.089)					
$Leader_{ict} \times DistCapital_{ic}$			0.002				
			(0.029)				
$Leader_{ict} \times DistCoast_{ic}$				0.009			
				(0.021)			
$Leader_{ict} \times Elevation_{ic}$					0.083**		
					(0.036)		
$Leader_{ict} \times Ruggedness_{ic}$						-0.462	
						(0.300)	
$Leader_{ict} \times AgriSuitability_{ic}$							-0.202
							(0.138)
Region fixed effects	yes	yes	yes	yes	yes	yes	yes
Country-year dummy variables	yes	yes	yes	yes	yes	yes	yes
R-squared	0.490	0.490	0.490	0.490	0.490	0.490	0.495
Observations	41,416	41,416	41,416	41,416	41,416	41,416	39,964
Countries	137	137	137	137	137	137	134

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to GREG) from 1992–2013, excluding country-years with ethnic transitions. Dependent variable is $Light_{ict}$. Column (1) includes $PopDensity_{ict}$ as control variable (coefficient not reported). Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Table A4: Historical political centralization and ethnic favoritism

	Ethnologue				GREG			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Leader_{ict}$	0.291***	0.322***	0.215***	0.241***	0.210***	0.245***	0.188***	0.212***
	(0.094)	(0.109)	(0.074)	(0.080)	(0.071)	(0.069)	(0.042)	(0.040)
$Leader_{ict} \times Centralization(ordered)_{ct}$	-0.085***	-0.094***			-0.044	-0.053*		
	(0.024)	(0.027)			(0.029)	(0.030)		
$Leader_{ict} \times Centralization(dummy)_{ct}$			-0.192**	-0.223**			-0.112*	-0.125*
			(0.076)	(0.084)			(0.063)	(0.068)
Region fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Country-year dummy variables	yes	yes	yes	yes	yes	yes	yes	yes
R2	0.211	0.201	0.211	0.200				
Observations	63,001	53,150	63,001	53,150	13,554	10,943	13,554	10,943
Countries	40	23	40	23	40	28	40	28
Countries with missing obs.	included	excluded	included	excluded	included	excluded	included	excluded

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to respective ethnographic map) from 1992–2013, excluding country-years with ethnic transitions. Dependent variable is $Light_{ict}$. Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.

Table A5: Elections with term-limited political leaders and ethnic favoritism

	Ethnologue		GREG	
	(1)	(2)	(3)	(4)
$Leader_{ict}$	0.052**	-0.033	0.066**	0.047
	(0.024)	(0.066)	(0.033)	(0.029)
$Leader_{ict} \times Election_{ct+1}$	0.031	0.029	0.041**	0.043**
	(0.020)	(0.021)	(0.020)	(0.021)
$Leader_{ict} \times Election_{ct}$	0.026	0.023	0.017	0.017
	(0.019)	(0.019)	(0.022)	(0.022)
$Leader_{ict} \times Election_{ct-1}$	0.043**	0.045**	0.014	0.022
	(0.022)	(0.023)	(0.021)	(0.021)
$Leader_{ict} \times ElectionTL_{ct+1}$	-0.061	-0.060	-0.040	-0.048
	(0.062)	(0.063)	(0.040)	(0.043)
$Leader_{ict} \times ElectionTL_{ct}$	0.039	0.037	-0.001	-0.009
	(0.035)	(0.036)	(0.044)	(0.046)
$Leader_{ict} \times ElectionTL_{ct-1}$	0.010	0.016	0.003	0.015
	(0.035)	(0.035)	(0.044)	(0.043)
$Leader_{ict} \times Elections_{c}$		0.083		0.008
		(0.071)		(0.045)
$Leader_{ict} \times ElectionsTL_{c}$		-0.043		-0.129*
		(0.057)		(0.076)
$Leader_{ict} \times Experience_{ct}$		0.003		0.008*
		(0.004)		(0.004)
Region fixed effects	yes	yes	yes	yes
Country-year dummy variables	yes	yes	yes	yes
R-squared	0.239	0.239	0.453	0.453
Observations	127,913	127,913	35,621	35,621
Number of countries	136	136	133	133

Notes: Table reports fixed effect estimates using annual data for ethnographic regions of multi-ethnic countries (according to the respective ethnographic map) from 1992–2013, excluding country-years with ethnic transitions. Dependent variable is $Light_{ict}$. Standard errors are adjusted for clustering at the country level. ***, **, * indicate significance at the 1, 5 and 10%-level, respectively.