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# Electoral motives and the subnational allocation of foreign aid in sub-Saharan Africa<sup>☆</sup>



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## ABSTRACT

This paper examines how electoral motives shape the subnational allocation of foreign aid commitments by employing a newly constructed geocoded dataset for 14 sub-Saharan African countries over the period 2000–2012. Our results provide strong evidence of a core voter strategy: African leaders diverting Chinese aid towards regions with a high concentration of political supporters. However, no evidence of such preferential treatment is found for World Bank aid, suggesting that aid from traditional donors is less vulnerable to political manipulation. Our results also reveal that checks and balances in recipient countries are an important mediating factor of aid misallocation: while copartisan regions receive larger amounts of Chinese aid in environments with weak checks and balances, these effects disappear when stronger checks and balances are in place. This paper also offers case study evidence from Ghana. Exploiting the 2009 regime change in Ghana and using a difference-in-differences framework, we provide further support of copartisan targeting and confirm that Chinese aid is more manipulable than World Bank aid in this respect.

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## 1. Introduction

Aid-recipient governments have predominant authority over the subnational allocation of aid, as the donors lack the ability, and often the willingness, to identify the citizens or regions with the highest economic needs (Wright and Winters, 2010; Jablonski, 2014). This creates incentives for ruling incumbents to distribute aid resources in ways that are beneficial to them; for instance, to maximize electoral returns, to grant special favors, or to reward or punish certain groups (Licht, 2010; Masaki, 2018). According to the literature on distributive politics, vote maximizing incumbents will follow either a 'core voter' strategy in which they target their core or loyal voters, or a 'swing voter' strategy in which they target voters who are indifferent about the candidates (Cox and McCubbins, 1986; Lindbeck and Weibull, 1987). Along these lines, leaders

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of aid-recipient countries may choose to serve their electoral interests by directing aid funding towards regions with more or fewer political supporters, depending on whether they are aiming at voter mobilization or persuasion. In the context of Africa, ethnic identities can play a role in shaping voting patterns (Bratton et al., 2012; Lindberg and Morrison, 2008). However, the demographic features of most African countries, where no ethnic group is large enough to form a numerical majority, imply that politicians can only win an election by adopting strategies that appeal to a range of voters and regions regardless of ethnic attachments (Hoffman and Long, 2013).

The extent to which political leaders engage in electorally-motivated aid allocation may depend on the source of aid; that is, whether aid comes from 'new donors', like China, or 'traditional donors' who are members of the OECD's Development Assistance Committee (OECD-DAC) or multilateral organizations (Dreher et al., 2011). It has been argued that China's cross-country aid allocation is driven by its desire to promote trade partnerships and access natural resources (Tull, 2006; Nissanke and Söderberg, 2011), and is not influenced by the democracy status or other governance characteristics of recipient countries (Dreher and Fuchs, 2015), in line with China's principle to 'respect for sovereignty with no conditions attached' (Bräutigam, 2011). This non-interference approach makes Chinese aid particularly vulnerable to political manipulation, as it provides leaders in recipient countries with substantial leeway to steer such funds to politically relevant groups (Manning, 2006). On the other hand, aid from traditional donors, like the World Bank, is subject to strict project appraisal policies and monitoring procedures, thereby making it less likely to be used for political purposes (Dreher et al., 2019a; Winters, 2010). Besides the type of donor, the domestic institutional environment can also place constraints on governments' strategic behavior (Hodler and Raschky, 2014; Mueller and Tapsoba, 2016). In particular, the existence of multiple veto players – checks and balances – in recipient countries can enhance the ability of any political group that is not represented by the ruling incumbent to oppose resource allocation decisions that are against its interests (Beck et al., 2016).

Our study aims to examine whether African leaders distribute aid resources in an electorally strategic way, and to assess the conditions under which this bias emerges. We contribute to the literature in four distinct ways. First, we test the core- versus swing-voter hypotheses using a newly constructed region-level dataset combining geocoded data from various sources. Existing studies on this topic either focus on a single country (Briggs, 2012; Dionne et al., 2013; Jablonski, 2014; Masaki, 2018) or employ country-level measures of electoral pressures to account for governments' electoral motives (Dreher et al., 2019a). We fill this gap by analysing subnational election data from 14 sub-Saharan African countries over the period 2000–2012 and by testing for preferential treatment of regions with strong voting support for the incumbent versus the opposition parties. Evidence that aid allocation is affected by regions' voting preferences will validate the argument that aid is manipulated for electoral ends, whereas the direction of the corresponding effects will indicate whether the allocation patterns are based on the core- versus the swing-voter model. Second, our work adds to the debate about how the type of donor (traditional versus new) can influence the process of aid delivery. While some studies provide evidence for the argument that only aid from new donors, like China, can be politically manipulated (Dreher et al., 2019a), others arrive at the conclusion that traditional donors, like the World Bank, cannot restrict leaders from engaging in politically motivated aid allocation (Briggs, 2014; Jablonski, 2014; Masaki, 2018). To shed further light on this debate, we distinguish between Chinese and World Bank aid commitments<sup>1</sup> – as in Dreher et al. (2019a) – and test if both types of aid can be used for electoral purposes. Third, we investigate heterogeneities in the effects across recipient countries by explicitly factoring in the interactive relationship with the strength of checks and balances. Since the existence of multiple veto players has long been identified as one of the most important factors reducing the ability of governments to manipulate the economy, assessing the role played by this institutional feature in preventing aid misallocation is adding one vital piece to the context-dependent aid manipulation literature. Fourth, we provide further insights into the politics of aid by focusing on Ghana, which is the largest recipient of Chinese aid (Strange et al., 2017) and has the highest number of region-year observations in our sample. Furthermore, using Ghana's 2009 regime change as a source of exogenous variation in the distribution of party vote shares within the country allows us to employ a difference-in-differences strategy. In this way, we can plausibly estimate causal effects and also tackle the possibility that these effects are driven by regime-specific interactions.

Our analysis reveals that political leaders in the 14 sampled African countries divert aid from China towards regions with a high concentration of incumbent supporters. Specifically, our estimates suggest that regions with the highest value of victory margin receive, on average, 40–48% more Chinese aid compared to regions with the lowest value of victory margin. At the same time, no evidence of electorally-induced aid allocation is found for aid from the World Bank, confirming that this type of funding cannot be easily manipulated for political reasons. To address potential endogeneity concerns, we document that regions that are not progovernment at a certain point in time, but will be progovernment in the very near future, do not receive more Chinese aid during these pre-treatment years. Our analysis also shows that the strength of checks and balances is an important mediating factor: under weak checks and balances, the allocation of Chinese aid appears to be strongly biased towards ruling party strongholds, whereas under stronger checks and balances, these effects are dampened or vanish. Finally, our difference-in-differences results for Ghana provide further evidence that Chinese aid allows leaders to target such resources to copartisan regions, whereas World Bank aid cannot be used in the same way. Even though Ghana is not characterized by very low formal institutional controls (like other countries in our sample), the country's

<sup>1</sup> On the use of aid commitments rather than disbursements, see footnote 11.

overdependence on Chinese aid seems to increase the leaders' capacity to use it as leverage to win elections. This is consistent with Bräutigam (2000)'s arguments that high aid dependency decreases the relative importance of the legislative branch and reinforces presidentialism in recipient states.

The rest of the paper proceeds as follows: Section 2 reviews the theoretical and empirical background; Section 3 describes the data and empirical strategy; Section 4 reports the empirical results and investigates their robustness; Section 5 presents case study evidence from Ghana; Section 6 concludes.

## 2. Background

### 2.1. Distributive politics: the core- versus swing-voter hypotheses

Under the assumption that political leaders are self-interested and office-seeking, it is in their strategic interest to allocate resources in ways that maximize electoral returns. Targeting of voters can be achieved through different channels: by providing public service jobs and public goods (such as roads, schools, clinics, cash grants and transfers, and subsidies), by reducing taxes, and by diverting foreign aid projects to certain regions (Persson and Tabellini, 1999; Robinson and Verdier, 2013). In the context of developing states, including African countries, these targeted exchanges can lead to the development of patron-clientelistic networks that can be used by incumbents to monitor voting and deliver on their promises (Van de Walle, 2007; Jablonski, 2014).

The existing literature on distributive politics offers two theories concerning how political leaders channel resources for electoral purposes: the 'core voter hypothesis' and the 'swing voter hypothesis' (Lindbeck and Weibull, 1987; Dixit and Londregan, 1996). The 'core voter hypothesis' posits that politicians target their core and loyal voters in exchange for their continuous support (Cox and McCubbins, 1986). Thus, according to this hypothesis, regions with a high concentration of incumbent supporters will receive a higher share of distributive goods compared to those with a high concentration of opposition supporters. On the other hand, the 'swing voter hypothesis' posits that politicians take core voters for granted and target instead the swing voters; that is, voters who are indifferent about the candidates and can easily change their vote based on the benefits they receive (Dixit and Londregan, 1996; Weghorst and Lindberg, 2013). Thus, according to this hypothesis, regions with many weak supporters for the opposition party or potential swing voters will receive higher share of distributive goods compared to the incumbent strongholds.

The choice between a 'core voter' strategy and a 'swing voter' strategy depends, to a large extent, on parties' re-election approaches. As stressed by Cox (2006), if parties focus exclusively on persuasion, they cannot be reliable agents of their core voters, since core voters cannot credibly threaten to punish their party; if, on the other hand, they focus primarily on coordination and mobilization, there is much less tension between the goals of maximizing votes and serving the interests of core voters. Furthermore, it has been argued that the weight politicians assign to future elections can influence the resources allocated to areas that are not committed to political parties: if the incumbent party has a multi-election time horizon, it should direct more resources to the areas that lean towards it, because, in a repeated game, one would expect parts of the country to shift their allegiances in response to the flow of resources in earlier time periods (Briggs, 2012).

A critical assumption associated with the swing voter strategy is that politicians know with certainty where the swing voters are located. In African countries though – where democratic systems are weak, political parties are young, and party affiliations are highly fluid – there is very poor information about voters' switching preferences from one election to the next (Bleck and van de Walle, 2013; Casas, 2012). As a result, the optimal strategy for incumbents aiming at persuasion is to target distributive goods to districts with fewer loyalists (opposition strongholds). Indeed, as argued by Masaki (2018), in the absence of concrete knowledge about the location of the swing voters, incumbents would seek to award as many opposers as possible, because, in this way, they can mitigate the political influence of the opposition parties and expand their own support base. It is thus not surprising that prior empirical studies focusing on African countries find evidence that ruling incumbents allocate more goods either to incumbent strongholds (Kroth et al., 2016; Weinstein, 2011) or to opposition strongholds (Green, 2010; Banful, 2011).

It must also be noted that distributing goods to regions with many weak opposers (or potential swing voters) is not the same as the targeting of 'swing districts'; that is, electoral districts or parliamentary constituencies where the ruling party has marginally won or lost seats in past elections. A 'swing district' strategy can be an appropriate strategy when incumbents seek to maximize their number of electors in an electoral college (like in the US presidential elections), or when they seek to optimize legislative outcomes under a majoritarian electoral system (Persson and Tabellini, 2003). In the context of Africa though, such a strategy is much less relevant because, in most of the cases, the executive is elected based on the overall national vote, and the parliaments are still relatively weak (Masaki, 2018). Consequently, in African countries, 'legislative targeting' and the related electoral rules play a less important role as compared to 'electoral targeting' aiming at maximizing the executive's re-election prospects. And, as mentioned above, the latter can take the form of distributing benefits to regions – which do not necessarily coincide with electoral districts – with either strong or weak support for the ruling party.

## 2.2. Electoral strategies: ethnic and non-ethnic considerations

A central debate about elections in African countries concerns the role of ethnic identities (as determined by cultural origins and descent-based traits) in forming political opinion and stimulating political action.<sup>2</sup> Earlier studies on this debate argue that ethnicity is the prime predictor of voting behavior because it can serve as an important source of information to voters about what to expect from elected officials in terms of patronage and policies (Mattes, 1995; Chandra, 2004; Posner, 2005; Ferree, 2006). If the logic of ethnic voting holds, and all voters choose parties exclusively based on ethnic and racial attachments, then an election can resemble an 'ethnic census' (Horowitz, 1985) in the sense that its outcome is merely a headcount of ethnic groups. More recent studies, however, present results that challenge this view and contribute to a growing literature that highlights the importance of non-ethnic factors in explaining electoral outcomes in Africa. With reference to Kenya, for instance, Bratton and Kimenyi (2008) find that considerations of economic self-interest matter the most for individuals who define their identities in non-ethnic terms, whereas Gibson and Long (2009) and Ferree et al. (2014) find that perceptions about party performance and campaign issues can have a strong influence on vote choice. Similarly, Bratton et al. (2012), using survey data from 16 sub-Saharan African countries, report that, while ethnic sentiments play a role in shaping voting patterns, rational calculations about material welfare are at the forefront of voters' minds. Party attributes and economic conditions have also been shown to trump ethnicity in selected elections in Zambia and Ghana (see Hoffman and Long, 2013; Posner and Simon, 2002).

This recent wave of research on voting patterns in Africa also suggests that an electorally strategic distribution of goods should deviate from ethnic lines. First, most African countries have a large number of small ethnic groups, none of which can govern alone, and hence politicians cannot garner enough electoral support to win through strategies that appeal only to their ethnic groups (Hoffman and Long, 2013). Indeed, even though many African parties have ethnic bases, it is in their interests to run as far away from ethnic labels as possible,<sup>3</sup> since non-coethnics, who constitute the vast majority of the voting population, are those who ultimately decide the electoral outcome (Fridy, 2006). Second, as noted above, the intention to vote among Africans is largely driven by partisan considerations rather than ethnic factors, and thus distributing goods to the full set of the ruling party's supporters can generate higher electoral returns than an ethnic-based approach. In particular, the targeting of copartisan regions (as captured by voting shares in previous elections) can be used by the ruling party as an effective strategy to mobilize its loyal voters, but also as a mechanism to retain the support of 'strategic partisans'; namely, those who vote for the incumbent in the hope that they will be rewarded (or at least not punished) after the election (Bratton et al., 2012). To the extent that making electoral promises to distribute goods and rewards to opposition voters lacks credibility – especially when previous leaders favored their core voters – a persuasion-based electoral strategy, as implied by the swing-voter model, also seems to be a suboptimal choice (Briggs, 2012; Jablonski, 2014).

## 2.3. Is foreign aid distributed in an electorally strategic way?

Assuming that national governments have significant discretionary power to select the beneficiaries of donor projects, foreign aid can be used as a political tool. In other words, ruling incumbents may choose to channel such resources towards certain types of citizens or regions based on political considerations rather than the targeted populations' actual needs.

Empirical studies exploring whether governments engage in electorally-motivated aid allocation have produced mixed results. Briggs (2012), using data from a single World Bank-funded electrification project in Ghana, shows that the constituencies that eventually received electricity in 1999 were those that voted much more for the incumbent party in 1992 (the year before the project plan was finalised). Likewise, Jablonski (2014), using a large number of African Development Bank and World Bank aid projects in Kenya over the period 1992–2010, illustrates that there is a consistent bias in the distribution of aid towards copartisan and coethnic constituencies (with copartisanship being captured by the incumbent's victory margin in the last elections). Evidence that aid is awarded based on political factors is also provided by Dionne et al. (2013) in the case of Malawi; however, the authors show that this depends on the sector considered: aid for education purposes is found to be targeted at districts that support the incumbent, whereas aid for health purposes is found to be allocated according to district needs. Masaki (2018) reports quite different findings in the case of Zambia, based on data from aid projects financed by the World Bank, the African Development Bank and the Japan International Cooperation Agency over the period 1996–2010. Specifically, the author shows that, instead of rewarding their own supporters and coethnic voters, the ruling incumbents tend to allocate aid projects to buy the support of the opposition voters. Finally, a number of studies find no evidence of electorally-induced aid allocation. For instance, Francken et al. (2012), using data from foreign aid programs after cyclone Gafilo hit Madagascar in 2004, and Nunnenkamp et al. (2017), using district-level data on World Bank aid in the case of India, report that aid allocation is not affected by any political factors.

<sup>2</sup> A related strand in the literature looks at patterns of ethnic and birthplace favoritism: ruling incumbents diverting resources to their ethnic homelands and/or birth regions. Evidence of such favoritism has been provided with respect to a range of outcomes, such as road building (Burgess et al., 2015), nighttime light intensity (Hodler and Raschky, 2014; Mueller and Tapsoba, 2016; De Luca et al., 2018), education and health (Franck and Rainer, 2012), and foreign aid (Bommer et al., 2018; Dreher et al., 2019a; Öhler and Nunnenkamp, 2014).

<sup>3</sup> Ferree (2004) points out that South Africa's racial voters are not looking to attach themselves to racially exclusive parties; they are rather seeking parties that will look for the interests of their group, even if the latter coincide with the interests of other groups.



Evidence that aid is used as leverage to win elections has also been provided at the multi-country level. [Dreher et al. \(2019a\)](#), using data from 47 African countries over the period 2000–2012, show that the home regions of political leaders receive substantially more Chinese aid than other subnational regions, and argue that this effect can be explained by electoral motives. To provide support for this interpretation, the authors interact their birth region variable with country-level measures of electoral pressures, such as the timing of national elections and the degree of electoral competitiveness.<sup>4</sup>

In sum, previous studies looking at patterns of electorally-motivated aid allocation either focus on a single country or do not directly test the core- versus swing voter hypotheses using subnational election data. Our study aims to bridge this gap based on geocoded election data from 546 regions in 14 African countries. A multi-country analysis along these lines can help to eliminate potential spurious generalizations derived from previous, case-based studies.

#### 2.4. What is the role of donor and institutional constraints?

Electorally-induced outcomes tend to generate greater theoretical insights and to receive stronger empirical support when one recognizes their context conditionality. The source of aid (type of donor) and the domestic institutional environment can be thought as two contextual factors influencing leaders' ability to distribute aid resources for electoral purposes. Our study contributes to the literature by testing for electorally strategic aid allocation under the presence (and absence) of both donor and institutional constraints.

The World Bank and China are two donors with very different standards and procedures for designing, selecting and locating new development projects. The World Bank (a traditional multilateral donor) is widely regarded as a leader in development policy and practice and has a more stringent set of project appraisal procedures ([Dreher et al., 2019a; Jenkins, 1997; Warner, 2010](#)) allowing it to monitor whether aid is used for development purposes. On the other hand, China (a new and emerging donor) adheres to the principle of not interfering in the internal affairs of the recipient countries and fully respecting their right to independently choose their own paths and models of development ([State Council, 2014](#)). In line with this principle, China's aid projects are not subjected to any economic evaluation prior to approval, and are rather selected and sited based on a demand-driven approach, with the initiative usually coming from the recipient side ([Dreher et al., 2019a](#)). China also appears unwilling to criticize host governments that fail to maintain projects that it previously funded ([Bräutigam, 2012](#)). These observations imply that Chinese aid can be easily used by ruling incumbents as leverage to gain votes ([Dreher et al., 2019a; Manning, 2006](#)). Although World Bank aid can also be vulnerable to political manipulation ([Jablonski, 2014; Masaki, 2018](#)), the existence of project appraisal policies and monitoring procedures is expected to reduce the capacity of leaders to exploit it for political purposes. Consistent with these arguments, [Dreher et al. \(2019a\)](#) find that, in contrast to Chinese aid, funding from the World Bank does not disproportionately benefit the birth regions of political leaders in Africa.

The recipient country's institutional environment can also determine the extent to which foreign aid is misused for political purposes,<sup>5</sup> especially when this aid comes from a donor with flexible arrangements, like China. One of the most important institutional features is the number of decision makers whose agreement is necessary before policies can be changed. As highlighted by [Beck et al. \(2016\)](#), the existence of multiple veto players – checks and balances – should make it more likely that any given political, ethnic, religious or other interest group has the ability to block state actions that are to its detriment. While the central fact of contemporary African governance is that large political power is concentrated in the hands of African presidents and loyal elites ([Yeh, 2013](#)), the presence of an independent legislature and other accountability groups can offer some sort of protection from arbitrary government actions. For instance, in Nigeria, Malawi and Zambia, it was the parliament, and especially the opposition parties, that rejected the outgoing presidents' attempts to hang onto power and implement unconstitutional changes ([Matersson and Meirotti, 2017](#)). Following these arguments, we expect that groups of citizens that are not represented by the ruling incumbent will gain greater representation as the number of decision makers rises and prevent political leaders from abusing their power for electoral ends.

The discussion in this section suggests that, in the absence of donor and institutional constraints (when aid comes from China and checks and balances are weak), incumbents will have substantial leeway to distribute aid resources in an electorally strategic way, and, as such, the resulting political effects will be highly pronounced. On the other hand, in the presence of donor and institutional constraints (when aid comes from the World Bank and checks and balances are stronger), incumbents will adjust their aid portfolio in response to project economic evaluations and non-government interest group pressures, and thus aid allocation decisions will be less dictated by narrow political agendas. In other words, in countries/years with weak constraints, we will be able to observe a strong bias in the allocation of aid towards regions with many core voters (if electoral strategies focus on coordination and mobilization) or towards regions with many opposition

<sup>4</sup> The elections in our sample are generally considered to be competitive: they take value 6 or 7 in the [DPI, \(2015\)](#)'s indices of electoral competitiveness for executive or legislative elections. This provides a good setting for testing the core- versus swing-voter hypotheses, since these models assume that political leaders face competitive elections. On the issue of electoral competitiveness, see also footnote <sup>30</sup>.

<sup>5</sup> The impact of the institutional environment has also been highlighted in studies looking at ethnic and birthplace favoritism in other outcomes, such as road investments and nighttime light intensity ([Burgess et al., 2015; Hodler and Raschky, 2014; Mueller and Tapsoba, 2016](#)). When it comes to foreign aid, [Dreher et al. \(2019a\)](#) find no evidence that birthplace favoritism varies systematically with the tenure of the political leader or the quality of political institutions (as measured by the Polity score).

**Table 1a**  
Baseline Sample.

Country	Election Years <sup>a</sup>	Admin. Unit	No of Regions	No of Observations
Angola	2008	ADM1	18	71
Botswana	1999, 2004, 2009	ADM2	22	256
Cameroon	1997, 2002	ADM2	51	396
Cape Verde	1995, 2001, 2006, 2011	ADM1	9	113
Ghana	2000, 2004, 2008	ADM2	122	1447
Guinea-Bissau	2004	ADM2	23	92
Lesotho	1998, 2002, 2007	ADM1	10	128
Malawi	1999, 2004	ADM1	26	260
Mozambique	1999, 2004, 2009	ADM1	11	140
Sierra Leone	2007	ADM2	14	65
South Africa	1999, 2004, 2009	ADM1	9	113
Tanzania	2005	ADM2	138	684
Togo	2007	ADM2	21	105
Zambia	1996, 2001, 2006	ADM2	72	648

<sup>a</sup> We forward the election data up to (and including) the year of the next general election, and keep observations that fall within the period 2000–2012.

and potentially swing voters (if electoral strategies focus on persuasion), whereas, in countries/years with strong constraints, such biases will be less apparent.<sup>6</sup>

### 3. Cross-country analysis: empirical design

We now turn to examine empirically whether aid distribution is driven by electoral motives, and test the conditionality of the effects upon donor and institutional constraints. In this section, we describe our sampling procedure, specify the empirical model for carrying out the tests, and discuss the key variables.

#### 3.1. Sampling procedure

We employ region-level data from 14 sub-Saharan African countries over the period 2000–2012. Regions correspond to provinces (first administrative area or ADM1) and districts (second administrative area or ADM2) within recipient countries, as provided by the database of Global Administrative Areas (GADM). The countries considered are: Angola, Botswana, Cameroon, Cape Verde, Ghana, Guinea-Bissau, Lesotho, Malawi, Mozambique, Sierra Leone, South Africa, Tanzania, Togo and Zambia. The rationale for the choice of these countries is twofold: first, they received foreign aid from both China and the World Bank during the sample period and geocoded aid data are available from both donors; and, second, they had at least one election during the sample period and region-level data on the corresponding election results are available in the Constituency Level Elections Archive (CLEA, 2016).<sup>7</sup> To determine the years to be used in our analysis for each country, we forward the subnational election data up to (and including) the year of the next election – as in Jablonski (2014) – and match them with overlapping geocoded foreign aid data. For example, in the case of Tanzania, CLEA data for the 2005 election are carried forward until 2010 (the year of the next election), leaving us with geocoded electoral and foreign aid observations for the years 2006–2010.

For six countries, CLEA data are only available up to the first administrative level. Thus, our sample combines information for the ADM1 regions in these six countries with information for the ADM2 regions in the remaining eight countries (to be referred to as ‘baseline sample’). However, to ensure robustness, we also consider an alternative sample that includes information for the ADM1 regions across all countries (to be referred to as ‘ADM1 sample’). The ADM1 sample has the disadvantage that it allows for lower within-country variability, but it is useful in that it is more balanced across the sampled countries (in terms of region-year observations) and less sensitive to matching problems, which are more common at lower administrative levels. Tables 1a and 1b show the election years, the number of regions and the number of region-year

<sup>6</sup> As noted above, even though the World Bank’s projects are subjected to cost-benefit analysis, the decisions about the specific details of these projects cannot be completely detached from the host country’s preferences and broader strategies (Jablonski, 2014; Masaki, 2018). In addition, while there is a large variation in the quality of political institutions across African countries, very few of them have the same strength of institutional checks and balances as developed, established democracies. Hence, the presence of donor and institutional constraints in this context may not necessarily ensure that aid will benefit only the regions with the highest economic needs. Arguably, the World Bank’s priority for economic development and poverty reduction may compete, to some extent, with African leaders’ political preferences, as well as the diverse interests of powerful groups within the recipient country’s parliament, leading to a wider distribution of aid resources across different regions. In line with this argument, we find that, while richer regions (as captured by higher values of nighttime light intensity) within African countries receive more aid when constraints are absent, no relationship between aid allocation and economic activity exists when constraints are in place (see Section 4.4). Of course, to draw more robust inferences about the role that economic criteria play in distributing aid under the presence of constraints, additional information on the potential economic returns of funded and unfunded projects (as evaluated by the World Bank) is needed. An inquiry in this direction, however, falls beyond the scope of this study.

<sup>7</sup> For more details about the countries excluded from our sample, either because they do not meet these criteria or for other reasons, see Appendix A.1.

**Table 1b**  
ADM1 Sample.

Country	Election Years <sup>a</sup>	Admin. Unit	No of Regions	No of Observations
Angola	2008	ADM1	18	71
Botswana	1999, 2004, 2009	ADM1	13	153
Cameroon	1997, 2002	ADM1	10	78
Cape Verde	1995, 2001, 2006, 2011	ADM1	9	113
Ghana	2000, 2004, 2008	ADM1	10	114
Guinea-Bissau	2004	ADM1	9	36
Lesotho	1998, 2002, 2007	ADM1	10	128
Malawi	1999, 2004	ADM1	26	260
Mozambique	1999, 2004, 2009	ADM1	11	140
Sierra Leone	2007	ADM1	4	16
South Africa	1999, 2004, 2009	ADM1	9	113
Tanzania	2005	ADM1	30	143
Togo	2007	ADM1	5	25
Zambia	1996, 2001, 2006	ADM1	10	90

<sup>a</sup> We forward the election data up to (and including) the year of the next general election, and keep observations that fall within the period 2000–2012.

observations by country across the two samples. In total, there are 546 regions (4518 observations) in the baseline sample and 174 regions (1480 observations) in the ADM1 sample.<sup>8</sup> To reduce noise in the data, we exclude cases that correspond to imprecisely matched GADM and CLEA regions (91 observations in the baseline sample).<sup>9</sup> However, our key results are largely insensitive to adding them to the sample (see Section 4.4).

### 3.2. Empirical strategy

To investigate whether electoral motives can shape the subnational allocation of foreign aid, we employ an empirical specification that builds on the work of Jablonski (2014) and Dreher et al. (2019a) in the selection of variables, and takes the following form:

$$\text{'Aid'}_{ict} = \alpha \text{'Political Support'}_{ict} + \beta \mathbf{X}_{ic} + \mu_{ct} + \varepsilon_{ict} \quad (1)$$

where 'Aid'<sub>ict</sub> is the logarithm of real aid commitments per capita<sup>10</sup> allocated to region *i* in country *c* at time *t*;<sup>11</sup> 'Political Support'<sub>ict</sub> is the share of votes received by the incumbent party ('Incumbent Share') or the share of votes received by the two leading opposition parties ('Opposition Share') or the difference between the two shares ('Victory Margin') in region *i* of country *c* at the time of the last general election;  $\mathbf{X}_{ic}$  is a vector of control variables;  $\mu_{ct}$  represents country-year fixed effects; and  $\varepsilon_{ict}$  is an error term, clustered at the region *i* level.<sup>12</sup>

To provide evidence in favor of a mobilization-based electoral strategy – in line with the core voter model – the coefficient on 'Incumbent Share' ('Opposition Share') must have a positive (negative) sign, which, in turn, will result in a positive coefficient on 'Victory Margin'. On the other hand, to offer empirical validity for a persuasion-based electoral strategy – as implied by the swing voter model – the coefficient on 'Incumbent Share' ('Opposition Share') must have a negative (positive) sign, producing a negative coefficient on 'Victory Margin'. Since the latter variable reflects changes in the support for both the incumbent and the opposition parties, we treat it as our primary explanatory variable.

Vector  $\mathbf{X}$  includes a number of variables that may confound the relationship between the variables of interest and the distribution of aid, as described in Dreher et al. (2016) and also used in other studies (see, for example, Dionne et al., 2013; Henderson et al., 2012; Masaki, 2018; Tull, 2006). In particular, to account for the impact of geographical size and the role played by the country's capital city for aid allocation, we control for the logarithm of a region's land area in square kilometers ('Area') and an indicator for the region surrounding the country's capital city ('Capital Region'). To capture the claim that aid distribution is influenced by donors' desire to access natural resources and to promote trade with the recipient

<sup>8</sup> Fig. A.1 in Appendix A.3 shows the ADM1 and ADM2 regions across the 14 countries covered in our analysis based on the baseline sample.

<sup>9</sup> Imprecisely matched observations refer to cases where: GADM and CLEA regions have different geographical boundaries; CLEA regions change from one election to the next, creating matching problems within CLEA over time but also between CLEA and GADM; no precise information is found for the regions in CLEA.

<sup>10</sup> As in Dreher et al. (2019a), we add a value of 1 before taking the logarithm to avoid taking the logarithm of 0.

<sup>11</sup> There is sometimes a lag between the funding committed by donors and when such funding is disbursed (Dreher et al., 2019a). Following a consensus in the aid allocation literature, we use the total committed value of the project as opposed to the disbursement amount. As argued by Jablonski (2014), donors and governments decide on the amount and the location of aid disbursements during the planning or negotiation stage of the project and thus a government's control over aid allocation is mostly exercised during this stage. Similarly, according to Humphrey and Michaelowa (2019), the committed value of the project provides a better basis for understanding the motivations of both the financiers and the borrowers when a project is agreed upon even if, eventually, the project may not always be carried out. Disbursement amounts are only available for the World Bank (but not for China), and our key results on World Bank aid are robust to replacing aid commitments with disbursements (see Section 4.4).

<sup>12</sup> Our estimates remain statistically significant when we cluster standard errors at the ADM1 level, or when we use two-way clustering at the regional and year levels.



countries, we control for the sum of mineral facilities in each subnational region ('Mines'), an indicator for the regions with oil or gas fields ('Oil & Gas') and an indicator for the regions with ports ('Ports'). We also add to the specification the total length of roads per square kilometer ('Road Density') to proxy for the costs and challenges in implementing projects in less accessible parts of the country, and an indicator for the region where the political leader was born ('Birth Region') to capture the possibility that the birthplaces of political leaders receive larger amounts of aid. Finally, vector  $\mathbf{X}$  includes the logarithm of the average nighttime light intensity in 2000 ('Lights in 2000')<sup>13</sup> and the logarithm of the total population in 2000 ('Population in 2000') for each subnational region, as measures of economic development and population size, respectively.

To explore whether donor and institutional constraints are effective in preventing leaders from targeting politically relevant groups (as discussed in Section 2.4), we estimate Eq. (1) for both Chinese and World Bank aid, and then interact our primary explanatory variable, 'Victory Margin', with the variable 'Checks'. Evidence for the conditionality of the reported effects upon the degree of checks and balances can be inferred from the coefficients on 'Victory Margin' and the interaction term having the opposite signs.

The inclusion of country-year fixed effects allows us to control for (observed and unobserved) country-specific time-varying variables that could be correlated with the dependent variable, such as changes in poverty and non-aid sources of income at a national level. It must be stressed that only in Ghana (2008) and Cape Verde (2001, 2011) there is a change in regime (party in power) during the sampled years.<sup>14</sup> This suggests that our political support measures exhibit little within-region variation over time, and thus controlling for both country-year and region fixed effects is not appropriate in our case.<sup>15</sup> Indeed, as stressed by Beck (2001), in the presence of slowly changing variables, fixed effects soak up most of their explanatory power, and make it hard for such variables to appear either substantively or statistically significant.

Potential endogeneity concerns may arise when studying patterns of politically-motivated aid allocation. If the strength of political support at the regional level is partly determined by the incumbent's distribution of aid resources, reverse causality may drive the relationship between the two variables. Similarly, if party vote shares are influenced by unobserved regional characteristics that are also relevant for aid allocation, selection bias would prevent the identification of a causal effect. In Eq. (1), we mitigate these concerns by measuring political support based on the outcomes of the last election. This allows us to examine whether incumbents commit aid resources in response to the pre-existing distribution of party vote shares. To further test for endogeneity, we replace our continuous political support measure with a binary treatment variable capturing progovernment regions and look at the dynamics of aid allocation around the period of treatment.<sup>16</sup> More precisely, we compare the amount of aid received by regions that just ceased to be progovernment or will be progovernment in the very near future with the amount of aid received during the time of treatment. To be able to support causal claims, the pre-treatment time indicator must turn out to be statistically insignificant. As a final approach to alleviate endogeneity concerns, we use Ghana's 2009 regime change as a source of exogenous variation in the distribution of political support for the ruling incumbent, and employ a difference-in-differences specification with region fixed effects.

### 3.3. Main variables

In what follows, we provide brief information about our dependent and primary explanatory variables, and related data sources. For more explicit information on all model variables and detailed discussion of the dataset construction, see Appendix A.2.

**Foreign aid.** Data on World Bank aid projects approved between 2000 and 2012 are extracted from the AidData website (AidData, 2016). Data on Chinese aid projects are retrieved from Dreher et al. (2016, 2019a) and Strange et al. (2017). These datasets include information on each aid project given to recipient countries, such as the title of the project, the type of aid flow and the amount of aid committed to a specific geographical location. Per capita values are calculated by dividing the amount of aid for each region by the population of the region. Figs. 1 and 2 show the subnational allocation of Chinese and World Bank aid per capita (in real terms) in the sampled African countries. A dummy variable is also created as an alternative indicator for aid allocation that takes value 1 if China or the World Bank commits a project to a particular region (ADM1 and ADM2) in a given year.

**Political support.** Data on political support are obtained from CLEA (2016), which contains information on legislative (general) election results at the constituency level for different countries across the world.<sup>17</sup> We calculate the party vote

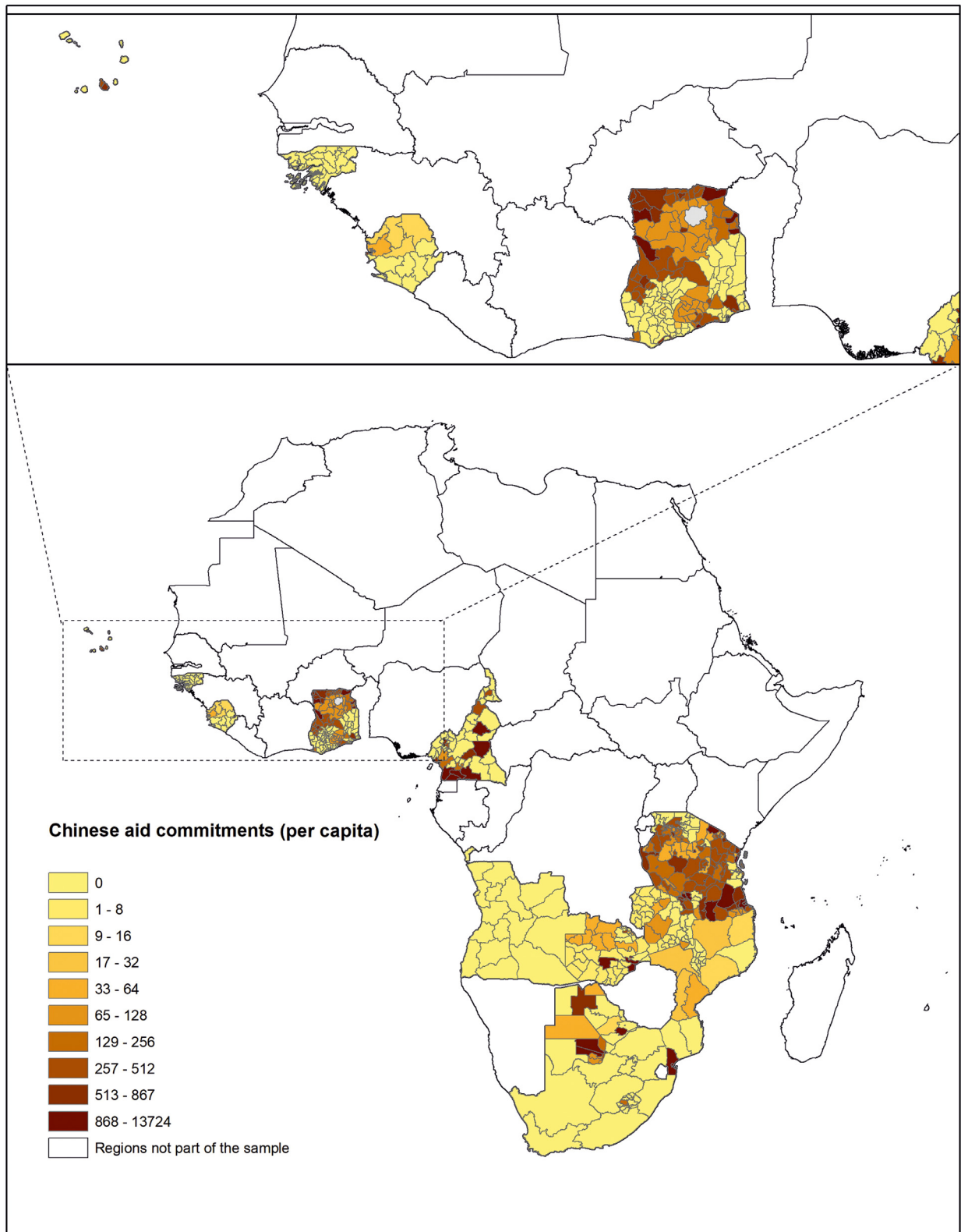
<sup>13</sup> As noted by Dreher et al. (2019a), using the year 2000 minimizes potential reversed causality. Our results do not change when we use the lagged value of nighttime light intensity.

<sup>14</sup> Regime changes also occurred in Guinea-Bissau (2004), Sierra Leone (2007) and Zambia (2011) during the period 2000–2012; however, we only have data for the years either before or after these changes (see Tables 1a and 1b).

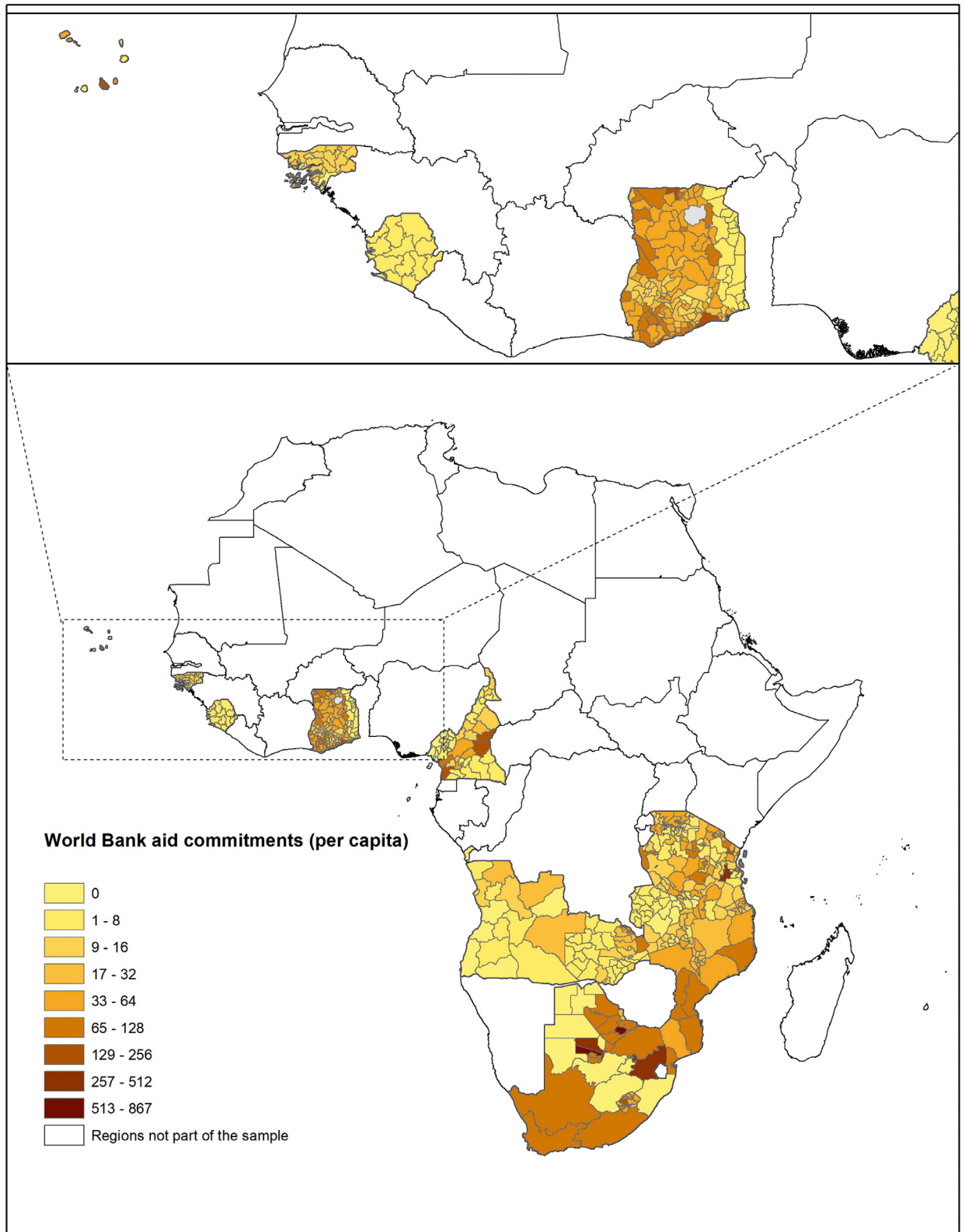
<sup>15</sup> For instance, Jablonski (2014), who runs regressions with region fixed effects, focuses on data from just one country and examines a much longer time period with multiple elections and regime changes.

<sup>16</sup> This identification strategy is motivated by recent related studies on ethnic or birthplace favoritism (see Bommer et al., 2018; De Luca et al., 2018; Dreher et al., 2019a).

<sup>17</sup> Even though eleven of our sampled countries are presidential regimes, no data on presidential elections are available at the constituency level. We are thus using the party vote shares in the legislative elections as a proxy for the party vote shares in the executive elections, as in Jablonski (2014). It must be stressed that only for three countries (Cameroon, Guinea-Bissau and Togo) the years of legislative elections do not coincide with the years of presidential elections, and only in one country (Cape Verde) the winning party of the presidential elections is not always the same as that of the legislative elections. Our key results hold when we exclude these four countries from our analysis (see Section 4.4).



**Fig. 1.** Allocation of Chinese Aid Per Capita. Chinese aid commitments per capita at the region level in sampled African countries (total in million constant 2009US\$).



**Fig. 2.** Allocation of World Bank Aid Per Capita. World Bank aid commitments per capita at the region level in sampled African countries (total in million constant 2009US\$).

**Table 2**  
Summary Statistics for Model Variables.

Variable	Obs	Mean	Std Dev	Min	Max
Chinese Aid per Capita (real)	4518	33.045	361.794	0.000	11622.713
Chinese Aid per Capita (real, in logs)	4518	0.396	1.382	0.000	9.361
World Bank Aid per Capita (real)	4518	4.095	20.581	0.000	838.676
World Bank Aid per Capita (real, in logs)	4518	0.681	1.070	0.000	6.733
Incumbent Share	4518	0.510	0.221	0.000	1.000
Opposition Share	4518	0.364	0.210	0.000	0.988
Victory Margin	4518	0.145	0.404	-0.976	1.000
Progovernment Region	4518	0.500	0.500	0.000	1.000
Progovernment Region <sup>inc</sup>	4518	0.450	0.498	0.000	1.000
Pre-treatment (1 year)	4518	0.017	0.131	0.000	1.000
Post-treatment (1 year)	4518	0.028	0.164	0.000	1.000
Pre-treatment (3 years)	4518	0.052	0.221	0.000	1.000
Post-treatment (3 years)	4518	0.080	0.271	0.000	1.000
Pre-treatment (3 years) <sup>a</sup>	4518	0.051	0.220	0.000	1.000
Post-treatment (3 years) <sup>a</sup>	4518	0.083	0.275	0.000	1.000
Area (in logs)	4518	8.158	1.580	2.809	12.967
Capital Region	4518	0.032	0.177	0.000	1.000
Mines (in levels)	4518	2.695	14.904	0.000	153.000
Oil & Gas	4518	0.036	0.185	0.000	1.000
Ports	4518	0.061	0.239	0.000	1.000
Road Density	4518	1.476	3.719	0.000	51.018
Birth Region	4518	0.025	0.155	0.000	1.000
Lights in 2000 (in logs)	4518	-1.893	2.027	-4.605	4.038
Population in 2000 (in logs)	4518	12.015	1.075	4.577	16.080
Coethnic Region	4518	0.577	0.494	0.000	1.000

<sup>a</sup> The pre- and post-treatment (3 years) indicators are based on the alternative definition of progovernment region ('Progovernment Region<sup>inc</sup>').

shares in each subnational region and election period by dividing the number of votes received by each party by the sum of votes received by all parties.

**Checks and balances.** To capture the recipient countries' checks and balances, we use the variable 'Checks' from the Database of Political Institutions of the World Bank (DPI, 2015). This variable counts the number of veto players (or key decision makers) in a political system, adjusting for whether these veto players are independent of each other, as determined by the level of electoral competitiveness in a system, their respective party affiliations, and the electoral rules. As noted by Beck et al. (2016), while this variable does not necessarily reflect the informal constraints on electoral competition or executive authority, it allows researchers to identify the extent of formal institutional controls on political decision making.

Table 2 provides summary statistics for all variables used in our analysis. As shown in this table, each region in our baseline sample is allocated, on average, 33.1 US\$ million of Chinese aid per capita (in real terms) and 4.1 US\$ million of World Bank aid per capita (in real terms) every year.<sup>18</sup> The incumbent and opposition shares take an average value of 51% and 36%, respectively, resulting in a victory margin with an average value of 15%. Checks and balances range between 1 and 4, with an average value of 2.77 and a standard deviation of 0.70.<sup>19</sup>

#### 4. Cross-country analysis: empirical findings

##### 4.1. Targeting of political supporters: average effects

We start our empirical analysis by estimating Eq. (1) for Chinese aid. This allows us to examine whether the subnational allocation of aid finance is subject to political manipulation when we focus on a donor with strong emphasis on non-interference. To do so, we employ the baseline sample and adopt an 'incremental' strategy where we progressively add new controls. In particular, we start from a simple specification that includes a political support measure and country-year FEs, and we then add the control variables in two stages: first, the set of variables that may predict the distribution of aid for incumbents or donors ('Area', 'Capital Region', 'Mines', 'Oil & Gas', 'Ports', 'Road Density' and 'Birth Region'); and, second, the measures of economic development and population size at the beginning of our sample period ('Lights in 2000' and 'Population in 2000'). Columns (1)–(3) of Table 3 display the corresponding results on four different panels, featuring

<sup>18</sup> The large difference in the value of aid projects per location between the two donors is consistent with other studies reporting that, while China finances fewer projects than the World Bank, these are much larger in scope. For instance, according to Gehring et al. (2019), China spends nearly ten times as much per project location.

<sup>19</sup> 'Checks' takes the following mean (min max) values across the sampled countries: Angola 1.0 (1 1), Botswana 2.5 (2 3), Cameroon 2.0 (2 2), Cape Verde 2.7 (1 3), Ghana 3.0 (3 3), Guinea-Bissau 3.0 (3 3), Lesotho 2.7 (2 4), Malawi 4.0 (4 4), Mozambique 2.8 (2 3), Sierra Leone 3.0 (3 3), South Africa 2.0 (2 2), Tanzania 2.0 (2 2), Togo 2.0 (2 2), Zambia 3.6 (3 4).

**Table 3**  
Political Support and Aid Allocation.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.						
	Chinese Aid			World Bank Aid		
	(1)	(2)	(3)	(4)	(5)	(6)
<b>PANEL I</b>						
Incumbent Share	0.296*** (0.090)	0.354*** (0.088)	0.331*** (0.087)	0.023 (0.073)	0.055 (0.074)	0.013 (0.070)
R Squared	0.235	0.253	0.254	0.363	0.371	0.385
<b>PANEL II</b>						
Opposition Share	-0.327*** (0.094)	-0.392*** (0.088)	-0.371*** (0.088)	-0.058 (0.073)	-0.087 (0.073)	-0.044 (0.069)
R Squared	0.235	0.254	0.255	0.363	0.371	0.385
<b>PANEL III</b>						
Victory Margin	0.175*** (0.049)	0.210*** (0.046)	0.198*** (0.046)	0.023 (0.038)	0.040 (0.039)	0.016 (0.036)
R Squared	0.235	0.254	0.255	0.363	0.371	0.385
<b>PANEL IV</b>						
Victory Margin	0.170*** (0.047)	0.197*** (0.044)	0.183*** (0.044)	0.034 (0.038)	0.045 (0.038)	0.013 (0.036)
Victory Margin Sq	0.033 (0.099)	0.089 (0.096)	0.105 (0.095)	-0.071 (0.076)	-0.034 (0.075)	0.024 (0.072)
R Squared	0.235	0.254	0.255	0.363	0.371	0.385
No of Observations	4518	4518	4518	4518	4518	4518
No of Regions	546	546	546	546	546	546
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. Columns (2) and (5) include the variables 'Area', 'Capital Region', 'Mines', 'Oil & Gas', 'Ports', 'Road Density' and 'Birth Region'. Columns (3) and (6) include the full set of control variables in vector  $\mathbf{X}$ . \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

estimates for alternative political support measures. As a first point, we can notice that regions with a larger share of votes for the incumbent party receive more Chinese aid, whereas regions that strongly support the opposition party receive less Chinese aid: the coefficient on 'Incumbent Share' ('Opposition Share') has the expected positive (negative) sign, is statistically significant at the 1% confidence level, and retains its size and statistical significance across the three specifications. These effects produce, in turn, a positive and highly significant impact of 'Victory Margin' on Chinese aid. Furthermore, our results show no evidence of non-linearities in this effect: the squared value of victory margin ('Victory Margin Sq') enters the regressions statistically insignificantly. Qualitatively, the estimates in Panel III suggest that regions with the highest value of victory margin receive, on average, 40–48% more Chinese aid compared to regions with the lowest value of victory margin<sup>20</sup> – with the upper bound corresponding to an increase in (the logged value) of Chinese aid by 0.30 standard deviations.

Overall, the findings on Chinese aid support the core voter model, and are in line with other studies arguing that ruling incumbents in African countries are better able to monitor voting and deliver on their promises by allocating aid commitments to their own supporters (Briggs, 2012; Jablonski, 2014). In this way, they can minimize the risk of wasting resources on non-loyalists, either because they do not have concrete information on whether such voters can actually be persuaded, or due to the lack of credibility in making electoral commitments to opposition voters.

Financial support from a donor with strict project appraisal policies and procedures may not be politically manipulated to the same extent as aid from China. Following this argument, we estimate the same regression set-up using aid from the World Bank as the dependent variable.<sup>21</sup> The corresponding estimates, reported in columns (4)–(6) of Table 3, indicate that the ruling incumbents in Africa do not use aid from the World Bank to reward their own supporters (in the same way they do with Chinese aid), as none of the coefficients on the variables of interest turn out to be statistically significant.<sup>22</sup>

As discussed in Section 2.2, a central debate about elections in Africa is whether vote choice is determined by ethnic group membership. If party vote shares overlap with a country's ethnic census – as argued by earlier studies on ethnic voting – then the observed bias in the allocation of Chinese aid could also reflect the effect of coethnic targeting; that is, leaders distributing aid resources along ethnic lines. To explore this possibility, we replace our political support measure with a binary indicator for coethnicity ('Coethnic Region'), taking value 1 if a region is populated by individuals with the

<sup>20</sup> Given that the outcome is logged US dollars, the percentage change effect is calculated by  $e^{\lambda} - 1$ , with  $\lambda$  being the estimated coefficient on victory margin ( $\alpha$ ) multiplied by the distance between the maximum and the minimum value of victory margin.

<sup>21</sup> The correlation coefficient between the total amount of Chinese aid commitments and the total amount of World Bank aid commitments allocated to each region is 0.066 with a  $p$ -value of 0.125.

<sup>22</sup> We also perform a test on whether the coefficient on 'Victory Margin' for Chinese aid is equal to the coefficient on 'Victory Margin' for World Bank aid (columns (3) and (6)). This test returns a  $p$ -value of 0.002, confirming that copartisan targeting is statistically different between the two aid sources.

**Table 4**  
Coethnicity and Aid Allocation.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.						
	Chinese Aid			World Bank Aid		
	(1)	(2)	(3)	(4)	(5)	(6)
<b>PANEL I</b>						
Coethnic Region	0.009 (0.048)	0.009 (0.046)	-0.000 (0.046)	-0.002 (0.032)	-0.002 (0.031)	-0.022 (0.030)
R Squared	0.233	0.251	0.252	0.363	0.371	0.385
<b>PANEL II</b>						
Victory Margin	0.149** (0.075)	0.240*** (0.075)	0.213*** (0.075)	0.046 (0.053)	0.085 (0.056)	0.023 (0.050)
Coethnic Region	-0.079 (0.052)	-0.085 (0.052)	-0.093* (0.053)	-0.009 (0.039)	-0.014 (0.039)	-0.036 (0.037)
Victory Margin * Coethnic Region	0.124 (0.115)	0.031 (0.112)	0.064 (0.111)	-0.034 (0.082)	-0.067 (0.083)	0.024 (0.078)
R Squared	0.236	0.254	0.255	0.363	0.371	0.385
No of Observations	4518	4518	4518	4518	4518	4518
No of Regions	546	546	546	546	546	546
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. Columns (2) and (5) include the variables 'Area', 'Capital Region', 'Mines', 'Oil & Gas', 'Ports', 'Road Density' and 'Birth Region'. Columns (3) and (6) include the full set of control variables in vector **X**. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

same ethnicity as the current political leader (GeoEPR, see [Vogt et al., 2015](#)).<sup>23</sup> The results, displayed in Panel I of [Table 4](#), reject the hypothesis of coethnic targeting: the coefficient on 'Coethnic Region' appears to be economically and statistically insignificant across all specifications and for both sources of aid. This is in line with the recent work of [Bommer et al. \(2018\)](#) who find no evidence of ethnic favoritism in the allocation of US humanitarian aid,<sup>24</sup> and rhymes well with the arguments put forward in our paper. In most African countries, no ethnic group is large enough to govern alone, and thus incumbents must appeal to the full set of their core supporters (regardless of the ethnic group to which they belong) in order to win the upcoming elections.

A related question is whether political support and coethnicity have an interactive or joint effect on aid distribution. If shared ethnic identities provide denser networks and offer better channels of coordination and mobilization at election time ([Kitschel and Wilkinson, 2007](#)), leaders may choose to divert additional amounts of Chinese aid to regions with a high concentration of core voters if these regions are also populated by members of their ethnic group. Panel II of [Table 4](#) tests for this joint effect by interacting our primary explanatory variable, 'Victory Margin', with 'Coethnic Region'. The interaction term enters the specification with a positive sign but fails to reach statistical significance, suggesting that political support has the same effect on aid distribution in both coethnic and non-coethnic regions.

#### 4.2. Endogeneity tests

To alleviate potential endogeneity concerns, we go one step further and control for the years before and after a region became 'politically important' (as captured by high levels of political support for the ruling party). This exercise allows us to evaluate the presence of an important form of omitted variable bias; that is, unobserved factors affecting both the political support for the ruling party and the amount of aid received by regions ([Bommer et al., 2018](#)). The rationale here is that regions that will become politically important in the future, or used to be politically important in the past, exhibit the same underlying traits in these pre- and post-treatment years as in the years in which they are politically important (treatment years). Statistically significant coefficients on the pre- and post-treatment variables would indicate the presence of omitted variable bias and would cast doubt on our interpretation that regions receive more aid only when leaders perceive them as politically important. At the same time, a statistically insignificant pre-treatment variable allows us to rule out the possibility of reverse causality; that is, regions supporting the incumbent at higher levels because they received more aid in the years preceding an election. It must be acknowledged that a statistically significant coefficient on the post-treatment variable,

<sup>23</sup> The Geo-referencing Ethnic Power Relations (GeoEPR) dataset geocodes the current location of all politically relevant ethnic groups based on online expert surveys. It is a preferred source of information compared to the commonly used Geo-referencing of Ethnic Groups (GREG) dataset by [Weidmann et al. \(2010\)](#), which restricts the list of ethnic groups to those determined in the 1960s and uses language as the main criterion to distinguish between groups within countries. We must acknowledge, however, that GeoEPR has two limitations: first, it excludes geographically dispersed groups and those with an exclusively urban base; and, second, it does not indicate specific ethnicity shares ([Bommer et al., 2018](#)). Arguably, a continuous measure based on census data can capture more accurately the distribution of ethnic groups within a country, and produce more robust and conclusive evidence about the existence (or absence) of an ethnicity-driven electoral effect.

<sup>24</sup> [Dreher et al. \(2019a\)](#) also present results showing no robust coethnicity effect on the allocation of Chinese aid.



**Table 5**

Political Support and Aid Allocation: Progovernment Regions.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.								
	Chinese Aid				World Bank Aid			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Progovernment Region	0.113*** (0.038)	0.115*** (0.039)	0.100** (0.044)		-0.027 (0.029)	-0.025 (0.030)	-0.030 (0.032)	
Progovernment Region <sup>inc</sup>				0.117*** (0.043)				-0.041 (0.032)
Pre-treatment (1 year)		0.027 (0.113)				-0.119 (0.112)		
Post-treatment (1 year)		0.021 (0.069)				0.140 (0.109)		
Pre-treatment (3 years)			0.025 (0.090)	0.063 (0.088)			-0.018 (0.064)	-0.066 (0.063)
Post-treatment (3 years)			-0.122 (0.075)	-0.098 (0.074)			-0.010 (0.073)	-0.095 (0.076)
R Squared	0.254	0.254	0.254	0.254	0.385	0.386	0.385	0.386
No of Observations	4518	4518	4518	4518	4518	4518	4518	4518
No of Regions	546	546	546	546	546	546	546	546
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. All columns include the full set of control variables in vector **X**. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

though not desirable, will not necessarily invalidate a causal interpretation. As noted by [Dreher et al. \(2019\)](#), this might well reflect delayed commitments of aid that is pledged during the period of treatment.

Since the approach described above is applicable to binary exposure variables and our primary explanatory variable ('Victory Margin') is continuous, we construct binary indicators capturing progovernment regions. As a starting point, we define a region as progovernment if its victory margin at the time of the last general election exceeds the median of the distribution of the variable across all regions and years.<sup>25</sup> We then create time indicators capturing the periods before and after a region is assigned a progovernment status.

Columns (1) and (5) of [Table 5](#) show the estimates when we replace our continuous measure with progovernment regions, as defined above. Using this binary indicator, we again find evidence of a core voter strategy when we focus on Chinese aid, and no effects for World Bank aid. Qualitatively, the estimate in column (1) suggests that progovernment regions receive, on average, 12% more Chinese aid than other regions, which corresponds to an increase in (the logged value) of Chinese aid by 0.08 standard deviations. In the next columns, we augment the baseline specifications with the pre- and post-treatment time indicators. As in [Bommer et al. \(2018\)](#), we start with one year before and one year after a region takes a progovernment status (columns (2) and (6)) and then extend the time frame to three years to increase the number of available placebo events (columns (3) and (7)).<sup>26</sup> The pre- and post-treatment variables produce estimates which are smaller than those for progovernment regions (during the treatment period) or even negative, and none of them turns out to be statistically significant. Moreover, the progovernment region effect is little affected by the inclusion of the placebo dummies and remains statistically significant in the regressions for Chinese aid,<sup>27</sup> suggesting that our key finding cannot be explained by patterns of aid allocation in earlier or subsequent years.

The victory margin cutoff rule described above may result in a small number of cases where the incumbent party does not have a sufficiently large share of votes. To account for this, we re-define a region as progovernment if its victory margin exceeds the median, and, at the same time, its incumbent share is more than 50%<sup>28</sup> – with the corresponding variable denoted by 'Progovernment Region<sup>inc</sup>'. Columns (4) and (8) display the results when we re-run the regressions of columns (3) and (7) using this alternative definition. Once again, the pre- and post-treatment variables fail to reach statistical significance. Taken together, the placebo analysis in this section provides strong support for our interpretation of a positive and statistically significant coefficient on victory margin as evidence for copartisan targeting.<sup>29</sup>

<sup>25</sup> The median of victory margin is 13%, indicating that the support for the incumbent party is 13 percentage points higher than the support for the two leading opposition parties.

<sup>26</sup> The pre-treatment variable captures 79 changes from 0 to 1, whereas the post-treatment variable captures 125 changes for 1 to 0, with value 1 indicating a progovernment status.

<sup>27</sup> The R Squared also remains intact across specifications.

<sup>28</sup> Based on this alternative rule, 45% of region-year observations are coded as being progovernment regions (instead of 50%).

<sup>29</sup> As in the case with the continuous political support measure, we also perform tests on whether the coefficient on 'Progovernment Region' for Chinese aid (columns (1)-(4)) is equal to the corresponding coefficient on 'Progovernment Region' for World Bank aid (columns (5)-(8)). These tests return *p*-values between 0.003 and 0.017, confirming once again that copartisan targeting is statistically different between the two aid sources.

**Table 6**  
Interactions with Checks and Balances: Baseline Sample.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.				
	Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)
Victory Margin	0.792*** (0.207)	0.840*** (0.207)	0.169 (0.161)	0.183 (0.156)
Victory Margin * Checks	-0.219*** (0.064)	-0.227*** (0.066)	-0.052 (0.055)	-0.059 (0.053)
R Squared	0.237	0.256	0.363	0.385
No of Observations	4518	4518	4518	4518
No of Regions	546	546	546	546
Country-year FE	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Columns (2) and (4) include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table 7**  
Interactions with Checks and Balances: ADM1 Sample.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.				
	Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)
Victory Margin	0.904** (0.360)	1.069*** (0.331)	0.023 (0.239)	0.100 (0.247)
Victory Margin * Checks	-0.255*** (0.097)	-0.291*** (0.095)	0.018 (0.079)	-0.007 (0.079)
R Squared	0.383	0.424	0.440	0.466
No of Observations	1480	1480	1480	1480
No of Regions	174	174	174	174
Country-year FE	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline

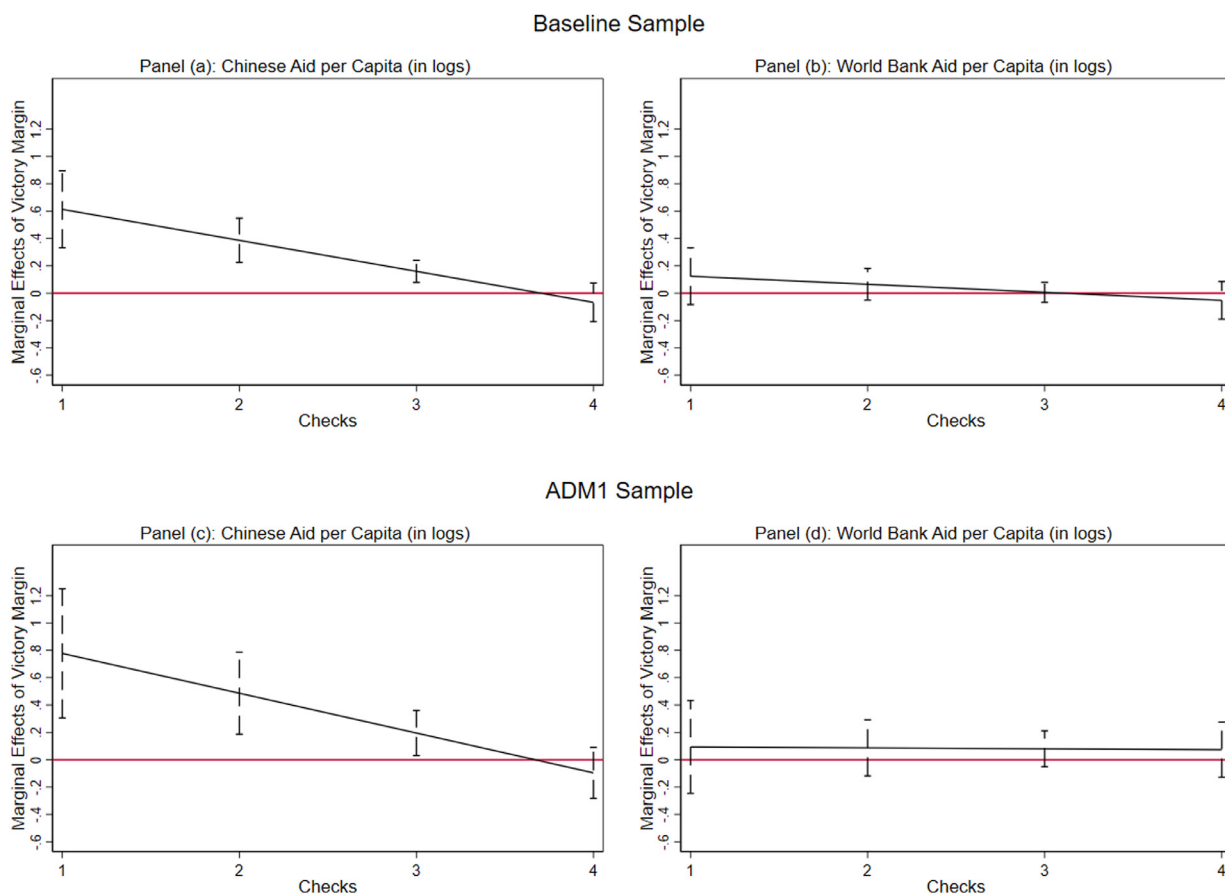
Columns report estimated coefficients. Columns (2) and (4) include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

#### 4.3. The mediating role of checks and balances

The results reported in Table 3 are not necessarily uniform across the countries covered in our analysis. As discussed in Section 2.4, the channeling of aid by leaders to politically relevant groups may be more prevalent under weak checks and balances. To investigate the empirical validity of this argument, we add to the specification with 'Victory Margin' its interaction with 'Checks'. Table 6 presents the results before and after the inclusion of the full set of control variables in vector **X**. Two regularities stand out. First, the extent to which political leaders engage in politically-motivated distribution of Chinese aid is highly conditional upon the strength of checks and balances. Specifically, under weak checks and balances, the allocation of Chinese aid is biased towards regions with high vote shares for the incumbent, whereas, under stronger checks and balances, these effects are dampened or vanish – as inferred from the positive and significantly estimated coefficients of 'Victory Margin', together with the negative and significantly estimated coefficients of the interaction terms with 'Checks'. Second, when we account for the mediating role of checks and balances, similar patterns can be observed for the World Bank aid, although the corroborating evidence is both economically and statistically weak.

Table 7 replicates the analysis on the conditionality of the effects based on the ADM1 sample; that is, using ADM1 regions as administrative units for all countries. Despite the smaller number of region-year observations and the lower within-country variability across eight sampled countries (with information on ADM2 regions), the results for Chinese aid are remarkably consistent with those in Table 6, confirming that under weak checks and balances the magnitude of the politically-driven effects amplifies. On the other hand, the estimated coefficients in the regressions for World Bank are now much smaller in absolute value, providing further evidence that World Bank aid is subject to less political manipulation.

To explore more thoroughly the conditionality of the effects upon the strength of checks and balances, we calculate the marginal effects of 'Victory Margin' (based on estimates from the regressions in columns (2) and (4) of Tables 6 and 7) and plot them over the respective values of the variable 'Checks'. As shown in Fig. 3, a strong bias in the allocation of Chinese aid for electoral purposes can only be observed under low institutional controls on political decision: while victory margin exerts a positive effect on Chinese aid at low levels of checks, this effect decreases or disappears at high levels of checks. Qualitatively, the estimates suggest that, when we evaluate the effects at low levels of checks (1 and 2), regions with the



**Fig. 3.** Conditional Effects. This graph shows the conditional effects of 'Victory Margin' at different values of 'Checks' based on the baseline sample (panels (a) and (b)) and ADM1 sample (panels (c) and (d)). The conditional effects are calculated based on the specifications of columns (2) and (4) in Tables 6 and 7. All other covariates are held constant at their means. Dashed lines signify 95% confidence intervals. Red horizontal line marks marginal effect of 0.

highest value of victory margin receive about 100–110% more Chinese aid compared to those with the lowest value of victory margin.

#### 4.4. Robustness tests

A key finding that emerges from our analysis so far is that the political bias in the subnational allocation of aid resources is subject to both donor and institutional constraints. To provide further support for this finding, we perform a series of robustness tests which are reported in Appendix A.3.<sup>30</sup> We start by checking whether our results hold when we consider alternative samples.

An important issue is the presence of selection bias when it comes to the allocation of aid by donors. It has been claimed that China may strategically allocate its aid in order to bribe countries into providing their support in international politics. If mutual political benefits are indeed a significant part of China's aid motives, one could argue that China is more likely to favor countries with weak institutional constraints, and create, in this way, scope for leaders to steer aid towards politically consequential regions.<sup>31</sup> In our sample, for instance, countries like Togo and Zambia receive substantially more aid from China than from the World Bank, while the opposite holds for Lesotho and South Africa. To test whether our results are driven by countries that receive aid primarily from China, we calculate the ratio of Chinese to World Bank aid allocated to each country over the sample period, and split the countries into two groups: the 7 countries with the highest values of

<sup>30</sup> Strong checks and balances are, to some extent, correlated with other institutional features and outcomes, such as higher degree of electoral competitiveness and shorter tenure (number of years in office) of executives. Following this argument, we have performed similar exercises with 'Checks' being replaced by other institutional variables from DPI (2015) and the Polity IV dataset. While interactions with these variables point to patterns in the same direction as checks and balances, the results (not reported) do not appear to be robust across different samples and specifications, indicating that the extent of formal institutional controls on political decisions is mainly what determines the size and significance of electorally-motivated effects on aid allocation.

<sup>31</sup> It must be noted that Dreher and Fuchs (2015) reject this argument. Specifically, they show that China's aid is independent of the recipients' institutional characteristics, which confirms its non-interference principle.

this ratio ('High Chinese Aid Group') and the 7 countries with the lowest values of this ratio ('Low Chinese Aid Group').<sup>32</sup> Table A.1 runs the regressions of Table 6 separately for the two country groups. Even though the coefficients on 'Victory Margin' and its interaction with 'Checks' are somewhat less significant for the latter group (partly due to the much smaller sample size), the inferences about the role of donor and institutional constraints do not change. Calculating the marginal effects of 'Victory Margin' at different values of 'Checks' produces also very similar patterns across the two country groups and confirms that, in both cases, Chinese aid is distributed in an electorally strategic way under low institutional controls (see Fig. A.2).<sup>33</sup>

Another issue is whether aid misallocation is only a phenomenon of majoritarian systems, where ruling incumbents have incentives to engage in 'legislative targeting' so as to maximize their number of seats in the parliament. As discussed in Section 2.1, this cannot be the case in the context of Africa, since the executive is almost always elected based on the overall national vote, and parliamentary power is still weak. Furthermore, legislative electoral rules have been shown to play a less important role in countries with weaker democratic institutions (Persson and Tabellini, 2003), and evidence of resource targeting at the local level has also been found in countries with a proportional system (see, for example, Fiva and Halse, 2016). Our sample is quite homogeneous in this respect, with only 14% of our region-year observations corresponding to proportional elections, which does not allow us to perform separate analysis for different electoral systems. Nevertheless, the conditionality of the reported effects upon donor and institutional constraints persists when we restrict the sample to include region-years with majoritarian elections only (see Table A.2).

We perform two additional checks with alternative samples. In Table A.3 we exclude the countries where legislative and presidential elections take place in different years or where the winning party of the presidential elections is not always the same as that of the legislative elections; namely, Cameroon, Cape Verde, Guinea-Bissau and Togo. This enables us to check the sensitivity of our results to measurement errors in the political support measure. In Table A.4 we keep only the country-years where at least one region is allocated a project from China (with known financial value) to capture biases arising from the inclusion of a large number of zero values in Chinese aid. As expected, standard errors and the size of the coefficients vary across these tables, but in both cases we get a positive and significant coefficient on 'Victory Margin' and a negative and significant coefficient on the interaction term with 'Checks' when we focus on Chinese aid.

We continue by assessing robustness to alternative model specifications. First, we use a binary project commitment indicator as the dependent variable (Table A.5); second, we include estimates based on aid disbursement amounts rather than aid allocation amounts, which are only available for the World Bank aid (Table A.6); third, we winsorize the dependent variable (Chinese aid and World Bank aid) at the 95% percentile to remove the impact of outliers at the high end of the distribution (Table A.7);<sup>34</sup> and, fourth, we add observations for imprecisely matched GADM and CLEA regions as discussed in Section 3.1 (Table A.8). The results of these tests do not change the inferences drawn from earlier findings.<sup>35</sup> Once again, we can observe: (i) a strong bias in the allocation of Chinese aid towards core supporters at low levels of checks and balances, which decreases at higher levels of checks and balances; (ii) similar patterns in the allocation of World Bank aid, which, however, are economically and statistically weaker and less robust across specifications.

The results support our claim that stronger constraints can reduce the capacity of leaders to exploit aid for electoral purposes. This raises the question of whether these constraints can also ensure that aid resources are distributed in a desirable way from a development perspective. To answer this question, we replace initial nighttime light intensity ('Lights in 2000') with nighttime light intensity in the previous year ('Lagged Lights') and document its estimates across different levels of 'Checks' (see Table A.9). When we don't account for the impact of institutional constraints, our proxy for economic activity is positive and highly statistically significant for both aid sources. This is consistent with Dreher et al. (2016) who find that (relatively) richer regions within African countries receive significantly more aid funding from both China and the World Bank. Our results, however, also indicate that these effects are exclusively driven by country-years with weak checks and balances: the estimate of 'Lagged Lights' is statistically insignificant when stronger checks and balances are in place. It seems that, under both donor and institutional constraints, aid is distributed more widely across different regions (with both 'Victory Margin' and 'Lagged Lights' having no effects), which may potentially reflect an attempt to simultaneously satisfy the diverse preferences and priorities of traditional donors, recipient governments, and non-government interest groups.<sup>36</sup>

<sup>32</sup> The 'High Chinese Aid Group' includes Angola, Cameroon, Ghana, Mozambique, Tanzania, Togo and Zambia, whereas the 'Low Chinese Aid Group' includes Botswana, Cape Verde, Guinea-Bissau, Lesotho, Malawi, Sierra Leone and South Africa.

<sup>33</sup> Our results persist when we exclude the three countries with the highest number of region-year observations in the baseline sample; namely, Ghana, Tanzania and Zambia (all in the 'High Chinese Aid Group').

<sup>34</sup> Winsorizing at the 90% and 80% percentiles produces remarkably consistent results.

<sup>35</sup> Even though the estimates for World Bank aid appear to be statistically significant in Table A.5, calculating the corresponding marginal effects of 'Victory Margin' at different values of 'Checks' indicates that these effects are relatively weak (both economically and statistically).

<sup>36</sup> The fact that opposition strongholds benefit much less from Chinese development projects does not imply that Chinese aid leads to negative local development outcomes. Dreher et al. (2016, 2019b), for instance, provide suggestive evidence that Chinese projects accelerate economic growth at sub-national scales, and that the bias in the allocation of Chinese aid towards leaders' birth regions does not reduce its effectiveness. The authors do point out, though, that this bias has significant distributional implications in the sense that it can contribute to economic inequalities between politically-privileged and politically-marginalized regions.

## 5. Case study analysis

In this section, we focus on the case of Ghana. This country provides an ideal setting to examine the political determinants of aid allocation for three main reasons. First, Ghana is the largest recipient of Chinese official finance to Africa in terms of total US dollars (Strange et al., 2017), and its aid budget constitutes a very large portion of the total discretionary budget that can be influenced by the political elite.<sup>37</sup> Second, Ghana has the largest number of region-years observations in our sample, which allows us to perform a comprehensive region-level analysis based on a single country. Third, it is one of the two countries in our sample that witnessed a regime change during the sampled years.<sup>38</sup> Exploiting this regime change and using a difference-in-differences framework with region fixed effects, we can plausibly estimate causal effects. Using this approach, we can also test whether each regime biases aid spending in a consistent manner (Jablonski, 2014).

### 5.1. Ghana's political context

Ghana holds elections every four years in December for both the president and the 230 members of the parliament. The president is elected using a two-round (run-off) system, whereas the parliament is elected using the first-past-the-post system in single-member constituencies. Elections are widely regarded as free, fair and competitive, and voter participation rates are high. Two political parties – the National Democratic Congress (NDC) and the New Patriotic Party (NPP) – dominate the political scene and have traded power two times over the period 1992–2012 (since the inception of the Fourth Republic). Jerry Rawlings of NDC stepped down in 2000 after serving the constitutional limit of two terms, and the new NDC candidate John Atta-Mills lost to John Kufuor of NPP in the 2000 election. Kufuor stepped down in 2008 at the end of his second term in office, and the new NPP candidate Nana Akufo-Addo lost to NDC's Atta-Mills in the 2008 election. Atta-Mills's term ended with his death in July 2012.

Ghana has long been associated with ethnoregional voting patterns, with the NPP being commonly viewed as the Asante party (the Asante is a subgroup of the broader Akan group) and the NDC as the party of the Ewe group.<sup>39</sup> Indeed, a number of studies looking at the country's elections in the 1990s and early 2000s document that the regions where these ethnic groups are concentrated vote overwhelmingly for their parties (Nugent, 2001; Fridy, 2006). Ethnicity, however, is not sufficient to predict vote choice in Ghana since the vast majority of the voting population does not ethnically self-define itself in a way similar to the two dominant parties (Harding, 2015; Bowman, 2017). The view that Ghana's elections are not an ethnic headcount has also been supported by Youde (2005) and Lindberg and Morrison (2008). Using survey data, the authors demonstrate that the government's performance in providing public goods matters a great deal, and that Ghanaians are more likely to base their vote on party rather than on candidates' personal characteristics. In a similar vein, Hoffman and Long (2013), who explore exit poll data from Ghana's 2008 election, find that party attributes and voters' perceptions of them are the most important determinants of vote choice. They also point out that, under these circumstances, politicians must appeal to a wide range of voters beyond their own ethnic groups to maximize their chances of winning the elections.

The president and his party hold significant power in Ghanaian politics. In all elections the party that won the president has also won at least a majority in the parliament (Bowman, 2017), which reduces the number of checks on the executive branch. It has also been argued that the parliament in Ghana does not make full use of its oversight and investigation power due to lack of understanding of substantive issues or because members of parliament (MPs) of the governing party may be holding out for a government post (Gyimah-Boadi and Prempeh, 2012; Meissner, 2010).<sup>40</sup>

These observations suggest that, even though Ghana is not characterized by very low formal institutional controls (like other countries in our sample), the ruling incumbents have still the capacity to manipulate aid resources for political purposes. Taking into account that vote choice in Ghana is largely driven by party attributes and partisan calculations made by voters in search of economic benefits, we expect to observe a bias in the allocation of aid towards copartisan regions. In addition, considering that foreign aid in Ghana is one of the most important tools for providing benefits to political supporters (due to the country's overdependence on aid resources),<sup>41</sup> we also expect that the effects will be highly pronounced in this setting.

### 5.2. Method and results

If the above accounts are correct, victory margin should exhibit a positive effect on aid allocation during both the Kufuor and the Atta-Mills regimes. To test for this, we use the 2009 regime change as a source of exogenous variation in the

<sup>37</sup> For instance, foreign aid in 2001 was equal to 64% of government expenditure (Briggs, 2012).

<sup>38</sup> On this point, see also footnote 14.

<sup>39</sup> Ewe was the ethnicity of Rawlings, who founded the NDC prior to Ghana's 1992 transition. Atta-Mills, who led the NDC government between 2009–2012, was of Fante ethnic origin (an Akan subgroup).

<sup>40</sup> As noted by Gyimah-Boadi and Prempeh (2012), the president in Ghana is bound by the constitution to choose a majority of his ministers from among sitting MPs, and successive presidents have seen this as an opportunity to coopt a substantial number of majority-party and independent MPs. Majority MPs can also benefit from presidential patronage through appointments to directorships on boards of public agencies and corporations.

<sup>41</sup> The diversion of aid for political purposes in the case of Ghana has also been highlighted in Briggs (2012). The author shows that Ghana's NDC government during the period 1993–1999 was able to target aid resources for electrification to the parts of the country that supported it politically, and also that the NDC benefitted electorally from this strategy.

**Table 8**

Political Support and Aid Allocation in Ghana.

Dependent Variable: Aid per Capita (in logs). Method: Difference-In-Differences.								
	Kufuor Regime				Atta-Mills Regime			
	Chinese Aid		World Bank Aid		Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KR Victory Margin * KR	0.891*** (0.197)	0.904*** (0.199)	0.094 (0.127)	0.091 (0.126)				
AMR Victory Margin * AMR					0.365* (0.212)	0.362* (0.216)	-0.248 (0.168)	-0.245 (0.162)
R Squared	0.235	0.237	0.336	0.339	0.220	0.221	0.337	0.340
No of Observations	1447	1447	1447	1447	1447	1447	1447	1447
No of Regions	122	122	122	122	122	122	122	122
Region and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Admin. Unit	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2

Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. Columns (2), (4), (6) and (8) include the full set of control variables in vector  $\mathbf{Z}$ . \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

distribution of political support within the Ghanaian territory, and estimate difference-in-differences regressions for each regime separately.<sup>42</sup> More formally, we estimate the following equation:

$$'Aid'_{it} = \gamma 'Regime\ Victory\ Margin'_i * 'Regime'_i + \delta \mathbf{Z}_{it} + \vartheta_i + \varphi_t + u_{it} \quad (2)$$

where  $i$  represents an administrative unit at the ADM2 level; 'Regime' $_i$  is a dummy variable taking value 1 if a particular regime is in power in year  $t$ , with 'KR' $_i$  denoting the Kufuor Regime (2001–2008) and 'AMR' $_i$  denoting the Atta-Mills Regime (2009–2012); 'Regime Victory Margin' $_i$  is the victory margin for the incumbent party in each region  $i$  based on the legislative election results in the year before each regime took office (2000 and 2008, respectively); and,  $u_{it}$  is an error term, clustered at the region  $i$  level.

This method builds on the idea that the political support for the regime's incumbent should only affect aid distribution during the years in office. Thus, by subtracting the effect of victory margin when a regime is in power from its effect when the regime is not in power,  $\gamma$  provides a reasonable estimate of the extent to which this regime distributed Ghana's aid finance towards ruling party strongholds. We choose to use a fixed political support measure – NPP's victory margin in 2000 and NDC's victory margin in 2008 – since it is less likely to be endogenous to aid trends than a voting share that changes over time (see, for example, Cascio and Washington, 2013; Carruthers and Wanamaker, 2015). It must be noted though that, even fixed voting shares across regions are not exogenously assigned and can be correlated with potential confounds. To mitigate this concern, and following the studies above, our specifications include region fixed effects ( $\vartheta_i$ ) with the aim to absorb any unobserved, region-specific and time-invariant characteristics that can affect aid flows and parties' voting shares. Our specifications also include year fixed effects ( $\varphi_t$ ) to account for shocks that are common to all regions. Finally, our specifications add vector  $\mathbf{Z}_{it}$  containing the following time-variant control variables: a dummy variable taking value 1 in year  $t$  if region  $i$  is the leader's birthplace ('Birth Region'); the logarithm of the total population in region  $i$  and year  $t$  ('Population'); and, the logarithm of the average nighttime light intensity in region  $i$  in the previous year  $t - 1$  ('Lagged Lights'). These variables are added to capture important time-variant factors that can still influence our estimates.

Table 8 shows the corresponding results for both Chinese aid and World Bank aid. Columns with odd numbers report estimates before the inclusion of vector  $\mathbf{Z}$ , whereas columns with even numbers report estimates for the full model specification. The evidence obtained indicates that both regimes utilized Chinese aid as leverage to stay in power: the coefficient on the interaction term 'KR Victory Margin \* KR' in columns (1)–(2) and the coefficient on the interaction term 'AMR Victory Margin \* AMR' in columns (5)–(6) have the expected positive sign and appear to be statistically significant at conventional levels. The Chinese aid bias in favor of political supporters, however, appears to be much stronger during the first regime, which was in power for two terms. Specifically, during the Kufuor regime (2001–2008), regions with the highest victory margin received about three times more Chinese aid per capita compared to regions with the lowest victory margin, whereas, during the Atta-Mills regime (2009–2012), this increase was 73%. Turning now to the regressions for World Bank aid (columns (3)–(4) and (7)–(8)), there is no evidence that either of the two regimes used funding from this donor for electoral ends, suggesting, once again, that aid from traditional donors is much less vulnerable to political manipulation.

In Appendix A.3, we produce a number of robustness checks based on the model re-specifications described in Section 4.4. Table A.10 uses a binary project commitment indicator as the dependent variable; Table A.11 uses aid disbursal amounts for the World Bank aid; Table A.12 shows estimates with the dependent variable (Chinese aid and World Bank aid) being winsorized at the 95% percentile; and Table A.13 adds observations for imprecisely matched GADM and CLEA regions.

<sup>42</sup> The idea of using a difference-in-differences specification with a continuous treatment variable was firstly introduced by Berlinski and Dewan (2011), and it is now widely employed in the literature (see, for example, Carruthers and Wanamaker, 2015; Cascio and Washington, 2013; Jablonski, 2014; Kroth et al., 2016; Vernby, 2013).



**Table 9**  
Coethnicity and Aid Allocation in Ghana.

Dependent Variable: Aid per Capita (in logs). Method: Difference-In-Differences.								
	Kufuor Regime				Atta-Mills Regime			
	Chinese Aid		World Bank Aid		Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KR Coethnic Region * KR	0.794*** (0.129)	0.845*** (0.140)	0.009 (0.098)	0.012 (0.102)				
AMR Coethnic Region * AMR					-0.788*** (0.190)	-0.794*** (0.194)	-0.067 (0.100)	-0.081 (0.097)
R Squared	0.237	0.239	0.335	0.339	0.235	0.236	0.336	0.339
No of Observations	1447	1447	1447	1447	1447	1447	1447	1447
No of Regions	122	122	122	122	122	122	122	122
Region and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Admin. Unit	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2

Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. Columns (2), (4), (6) and (8) include the full set of control variables in vector  $Z$ . \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

The results of each of these tests remain consistent with the results reported in Table 8. All in all, our findings support the idea that, in the context of Ghana, electoral motives influence aid allocation, and reinforce the argument that aid resources from China (with a non-interference approach to internal affairs) allow recipient country leaders to pursue their political agendas.

As a final test, we check whether the bias towards core voters actually reflects the effect of coethnic targeting. To do so, we replace the variable 'Regime Victory Margin'<sub>*i*</sub> in Eq. (2) with the variable 'Regime Coethnic Region'<sub>*i*</sub>, taking value 1 if region *i* shares ethnicity with the regime's incumbent and 0 otherwise. The corresponding results, displayed in Table 9, show statistically significant effects, which, however, follow opposite patterns across the two regimes: during the Kufuor regime, coethnic regions received 133% more Chinese aid per capita, whereas during the Atta-Mills regime, coethnic regions received 55% less Chinese aid per capita (compared to other regions). This finding, though surprising at first glance, can be explained by the contribution of coethnic groups to each party's vote: while the NPP was overwhelmingly supported by the Asante (Kufuor's ethnic group) in the 2000 and 2004 elections (Fridy, 2006), the NDC received a small amount of support by the Fante (Atta-Mills's ethnic group) in the 2008 elections. Specifically, according to Hoffman and Long (2013), only 37% of the Fante supported the NDC in the 2008 elections, and the NDC can be better characterised as a 'multiethnic coalition' since the Fante and the Ewe (the ethnic group of the party's founder) contributed to only 33% of its total vote.<sup>43</sup> These observations provide further validity to the argument that political support (and not coethnicity) is the driving force behind the observed effects: aid resources are diverted towards coethnic regions only if coethnics are a significant subset of the incumbent party's supporters. The fact that coethnic effects appear to be country-specific and vary across different regimes can also explain the absence of such effects in our cross-country analysis.

## 6. Conclusions

Our paper contributes to the limited, but growing, literature on how electoral motives shape the subnational allocation of foreign aid. To this end, we analyse a newly constructed dataset that combines geocoded data from various sources for 14 sub-Saharan African countries over the period 2000–2012. Controlling for a rich set of district-level variables and country-year fixed effects, we produce three key results. First, when provided with local ownership of aid-funded projects (like in the case of Chinese aid), African leaders seek to maximize their re-election prospects by allocating such resources to regions with a high concentration of incumbent supporters. In particular, regions with the highest value of victory margin receive, on average, 40–48% more Chinese aid compared to regions with the lowest value of victory margin. Second, patterns of aid misallocation are absent in terms of World Bank aid, in line with the view that the World Bank's project design policies and evaluation procedures can prevent systematic manipulation of its financial support. Third, the extent to which the distribution of aid is skewed by political reasons is conditioned by the degree of institutional controls on executive decision-making. Specifically, while ruling party strongholds benefit from larger amounts of Chinese aid in environments with weak checks and balances, less evidence of such preferential treatment is found in environments with stronger checks and balances. The latter suggests that a higher number of veto players, and more generally a sounder political system, can help to keep political leaders accountable to opposition voters.

<sup>43</sup> The NPP, on the other hand, might be characterised as the party of the broader Akan group (that includes the Asante) in the sense that 71% of its total vote in the 2008 elections came from ethnicities within this group (Hoffman and Long, 2013).

For ruling incumbents, making aid commitments to voters and delivering on them requires the provision of a great deal of information, which is arguably less costly in the case of core voters whose electoral predispositions are well known and who present little risk of wasting resources on them (Lindbeck and Weibull, 1987). On the other hand, concrete knowledge about where swing voters are actually located is much more difficult to obtain (Masaki, 2018), and making aid commitments to such voters is less credible and valuable, especially when previous leaders directed more resources to their own supporters (Briggs, 2012; Jablonski, 2014). Following these observations, it is thus not surprising that African leaders prefer to monitor voting by targeting and mobilizing voters in regions with strong support for the incumbent party (as documented here), rather than by persuading voters in regions with many opposition supporters.<sup>44</sup>

Our paper also contributes to the existing literature by providing case study evidence from Ghana. Exploiting the temporal variation in electoral effects caused by the 2009 regime change, we find that copartisan regions received larger amounts of Chinese aid when both Kufuor and Atta-Mills were in power (2001–2008 and 2009–2012, respectively). In addition, our analysis for Ghana confirms the absence of manipulation effects when it comes to aid resources from the World Bank. Ghana's overdependence on Chinese aid can explain, to some extent, the strong political bias in the allocation of Chinese aid, despite the country not having very low formal institutional controls. As highlighted by Bräutigam (2000), high aid dependence can intervene in the balance of power between the executive and legislative branches, and restructure the accountability mechanism as something between the government and its donors, rather than the government and its citizens, making it more difficult for the legislature to exercise its role. Consequently, our findings add emphasis to the arguments that donors should coordinate their aid, and that subnational target locations must be defended in (and approved by) parliaments, as they are the “only mechanism available, at least between elections, to discipline decision making” (World Bank, 1998).

## Appendix A. Appendix

### A.1. Sample of countries

The 14 countries considered in our study are: Angola, Botswana, Cameroon, Cape Verde, Ghana, Guinea-Bissau, Lesotho, Malawi, Mozambique, Sierra Leone, South Africa, Tanzania, Togo and Zambia. These countries meet the following two selection criteria: first, they received foreign aid from both China and the World Bank during the sample period and geocoded aid data are available from both donors; and, second, they had at least one election during the sample period and region level data on the corresponding election results are available in the Constituency Level Elections Archive (CLEA, 2016). Nepal, the Gambia and Zimbabwe are excluded from our sample because they do not meet the first criterion, whereas Kenya and Mauritius are excluded from our sample because they do not meet the second criterion.

Furthermore, four countries are dropped due to other reasons. Benin is excluded because it has only 6 aid observations for its 12 ADM1 regions over the sample period. Nigeria is excluded because the constituencies in the CLEA dataset cannot be matched to the GADM regions (numerical codes are given instead of names). Rwanda is excluded as there is no information available on its administrative boundaries in the GADM database. Liberia is excluded due to high inconsistencies in the electoral results between the executive and the legislative elections, and difficulties in identifying the incumbent and opposition parties throughout the sample period.<sup>45</sup>

### A.2. Dataset construction and sources

Appendix A.2 describes the variables used in our analysis and the respective data sources, and discusses in detail how our dataset is constructed.

- **Administrative boundaries.** The database of Global Administrative Areas or GADM (version 2.8, November 2015) provides shapefiles and polygons with countries' administrative boundaries. ADM1 regions refer to provinces and ADM2 regions refer to districts. These shapefiles and polygons are used to map and create variables at the region level (using the ArcGIS software).
- **Area.** Total area in square kilometres for each GADM administrative unit at the ADM1 and ADM2 levels computed using ArcGIS.
- **Population.** Total population for each GADM administrative unit at the ADM1 and ADM2 levels. Population is calculated using the UN-adjusted population count of the Gridded Population of the World (GPW) dataset by the Center for Inter-

<sup>44</sup> Studying the effectiveness of this strategy in terms of improving an incumbent's chance of re-election would add important insights to our understanding of the political effects of foreign aid. This question, however, falls beyond the scope of the current study and therefore we leave it for future research.

<sup>45</sup> Most of Liberia's political parties are formed for the sole purpose of joining political alliances as a means of getting 'lucrative' positions from the party that wins, and they usually wane away after elections are held, as was the case during the 2005 presidential elections ([www.globalsecurity.org](http://www.globalsecurity.org)).

national Earth Science Information Network (CIESIN, 2016). The variable is available for the years 2000, 2005, 2010 and 2015 and interpolation is used to fill out the values for the missing years in each country.

- **Foreign aid.** Total aid commitments for each administrative unit at the ADM1 and ADM2 levels.

Chinese aid flows are extracted from Dreher et al. (2016, 2019a) and Strange et al. (2017), who provide information about Chinese official finance activities in 49 African countries over the period 2000–2012, based on AidData's Tracking Underreported Financial Flows (TUFF) methodology.<sup>46</sup> World Bank aid flows are extracted from AidData (2016).

Aid projects are classified by different flow types, depending on how they were given from the donor to the recipient country. Following the definitions used by the OECD's Development Assistance Committee (DAC), we focus on Chinese aid commitment flows that correspond to Official Development Assistance (ODA-like flows), Other Official Flows (OOF-like flows) and vague official finance. Commitments are defined as "a firm obligation, expressed in writing and backed by the necessary funds, undertaken by an official donor to provide specified assistance to a recipient country or a multilateral organisation". Commitments are recorded in the full amount of expected transfer, irrespective of the time required for the completion of disbursements (Stewart and Russel, 2011).

ODA-like flows correspond to "flows of official financing administered by a non-DAC donor which meets the standards of official development assistance; the promotion of the economic development and welfare of developing countries as its main objective, and a perceived to be concessional in character with a grant element of at least 25 percent (using a fixed 10 percent of discount)". OOF-like flows are defined as: (i) financing to developing countries for representational or essentially commercial purposes provided by a non-DAC donor; (ii) official bilateral transactions intended to promote development but having a grant element of less than 25 percent; (iii) official bilateral transactions, whatever their grant element, that are primarily export-facilitating in purpose; (iv) the net acquisition by governments and central monetary institutions of securities issued by multilateral development banks at market terms; (v) subsidies (grants) to the private sector to soften its credits to developing countries; and, (vi) funds in support of private investment". Vague Official Finance is defined as "TUFF projects financed by an official agency but which lack sufficient information on the intent or concessionality of an agreement to accurately sort into the ODA-like, OOF-like or Official Investment categories". These definitions are taken from the AidData Data Management Plan (Stewart and Russel, 2011).

Similarly, the total value of World Bank aid commitment flows includes concessional flows (from the International Development Association) and non-concessional flows (from the International Bank for Reconstruction and Development). Following Jablonski (2014), we consider flows of up to precision 5. For flows where the precision is only up to an ADM1 region (precision 4) or for estimated coordinates (precision 5) that can be mapped to an ADM1 region, we scale the value of the project to the population share of each province within each district.

To construct the aid variable from each donor, we add the values of aid projects as follows:

$$'Aid'_{ict} = \sum (P1_{ict} + P2_{ict} + P3_{ict}) + \sum \left( [P4_{ict} + P5_{ict}] * \frac{'ADM2 Population'}{'ADM1 Population'} \right) \quad (A.1)$$

where  $P1_{ict}$  corresponds to flows of precision 1,  $P2_{ict}$  corresponds to flows of precision 2, and so on. Eq. (A.1) is based on the assumption that projects allocated at the province level benefit the entire population equally.

There are cases where aid flows are recorded for one country, but the geographical coordinates assign the aid flow to another country. In such cases, the precision code of each flow is taken into account. For example, if the precision is 3 (ADM2), the geographical coordinates that assign the aid flow to another country is ignored and information on ADM2 is considered. There are also cases where the aid flow has contradicting information on its location for neighbouring countries, particularly with respect to road transport projects and water projects. In such cases, the project number of each flow is considered. Some aid flows are divided between many locations in a particular country and the project number is used to identify the location that the flow belongs to.

Some missing values are generated when there were no available projects in certain regions. These missing values are replaced by zero, unless we know that there is a specific project in a specific administrative region whose value is unknown. If the same aid project is allocated to more than one location, we use population weights to determine the project value received by each location.

- **Political support.** The political support variables are constructed using information from the Constituency Level Elections Archive (CLEA, 2016). Each constituency in CLEA is matched with the ADM1 and ADM2 divisions of the GADM database based on their name. If the constituency name cannot be matched, the geographical coordinates of the constituency are used to identify its location on a GADM shapefile in ArcGIS. The party vote shares, as provided by the CLEA dataset, are not reliable as they sometimes exceed the value of 1 due to incorrect coding. To deal with this issue, we calculate the

<sup>46</sup> The TUFF methodology is designed to provide comprehensive, detailed, and accurate information about projects financed by donors and lenders that do not participate in global reporting systems, by rigorously standardizing and synthesizing information from thousands of available sources (<https://www.aiddata.org>).

party vote shares by dividing the total number of votes received by each party by the sum of votes received by all parties in each administrative unit.

The Database of Political Institutions (DPI, 2015) is used to identify the incumbent and the two main opposition parties based on the results of the last executive elections. Since there are no data on presidential elections at the constituency level, we are using the party vote shares in the legislative elections as a proxy for the party vote shares in the executive elections, as in Jablonski (2014). The victory margin refers to the party vote share of the incumbent party minus the party vote share of the two main opposition parties.

During the process of identifying the incumbent and opposition parties, a number of issues occurred, which are discussed below:

*Guinea-Bissau:* The politician winning the 2004 election was the independent candidate Joao Bernardo Vieira, who used to be affiliated with the African Party for the Independence of Guinea and Cape Verde (PAIGC). His opponent was Malam Bacai Sanha representing PAIGC. For this reason, the incumbent party chosen for the purposes of this study is PAIGC and the main opposition party is the Party for Social Renewal, whose candidate came third in the first round of the executive election.

*Malawi:* The second opposition party in the 2004 legislative election (third party in the executive election) was, in fact, a coalition of parties (the Mgwirizano Coalition) that included: the Malawi Democratic Party, the Malawi Forum for Unity and Development, the Movement for Genuine Democratic Change, the National Unity Party, the People's Progressive Movement, the People's Transformation Party and the Republican Party. To capture the vote share of the Mgwirizano Coalition, the number of votes of the aforementioned parties are added together.

*Sierra Leone:* The incumbent party 'All People's Congress' was supported by another party in the second round of the 2007 executive election; namely, the People's Movement for Democratic Change whose candidate came third in the first round of the election. Similarly, the opposition party 'Sierra Leone People's Party' was supported by three other parties in the second round of the 2007 executive election; namely, the National Democratic Alliance, the Peace and Liberation Party and the Convention People's Party. To capture the vote share of the incumbent and the opposition parties, the number of votes of the aforementioned parties are added together.

*Togo:* Only two parties (incumbent and main opposition) are used in the analysis for the 2007 election.

- **Political leaders.** Data on political leaders are obtained from the Archigos dataset (Goemans et al., 2009). This dataset provides information about the date the political leaders entered and exited office, and whether their exit was regular, irregular, through a direct imposition by another state or as a result of a natural death. A regular manner occurs legally through elections, whereas an irregular manner occurs with a coup.

Leaders that were in power for less than 90 days are excluded from our sample. For instance, Verissimo Correia Seabra of Guinea-Bissau led a coup that replaced the previous president for two weeks. Kgalema Motlanthe of South Africa served as a president for three months following the resignation of the previous president Thabo Mbeki. Faure Gnassingbe of Togo became president in 2005, following the death of the previous president Gnassingbe Eyadema, and his presidency lasted for twenty days until he resigned due to protests by opposition groups. Bonfoh Abass became then the interim president until Faure Gnassingbe won the election a few months later.

There are cases where there is no available information on the ethnic group of a political leader, such as for Armando Emilio Guebuza of Mozambique; or cases where the birth region of a political leader falls outside the country, such as for Ian Khama of Botswana who was born in the United Kingdom or for Rupiah Banda of Zambia who was born in Zimbabwe. In such cases, observations for the birth region and the coethnic regions are missing.

- **Coethnic regions.** Dummy variable taking value 1 when an administrative region is populated by the ethnic group of the active political leader (at the ADM1 and ADM2 levels).

The Geo-referencing Ethnic Power Relations (GeoEPR) dataset by Vogt et al. (2015) is used to identify the location of the leaders' ethnic group. The dataset geocodes all politically relevant ethnic groups, as well as their access to state power, using information from the Ethnic Power Relations (EPR) Core Dataset 2014. The authors classify an ethnic group as politically relevant "if at least one political organisation has claimed to represent its interests at the national level or if its members are subjected to state-led political discrimination", where discrimination is defined as "political exclusion directly targeted at an ethnic community" (Cederman et al., 2010).

For some countries, the GeoEPR dataset provides information for only one ethnic group, as these countries are classified as being homogeneous in terms of ethnicity. For instance, according to the GeoEPR dataset, Portuguese is the only ethnic group in Cape Verde and Basotho is the only ethnic group in Lesotho.

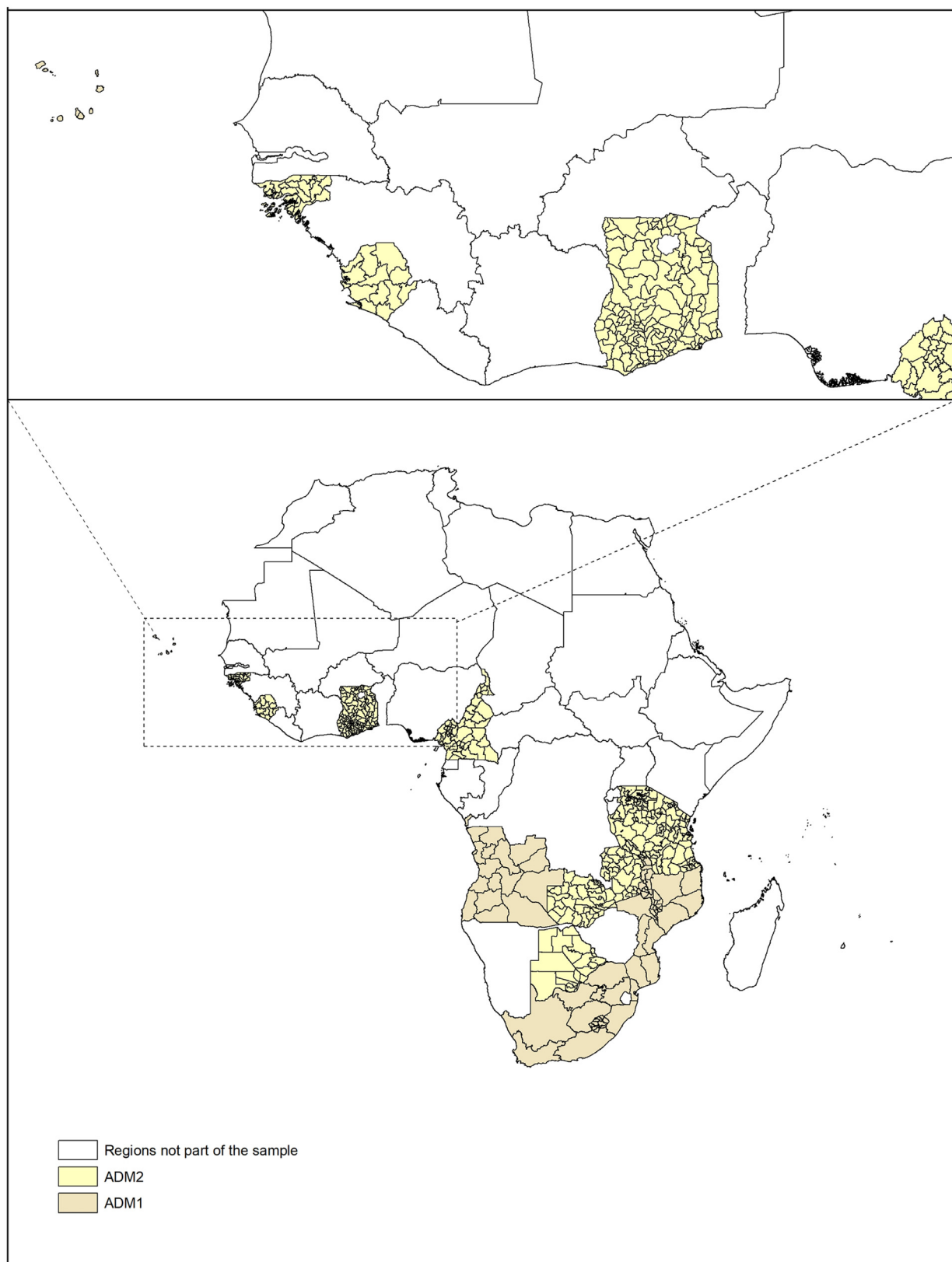
- **Checks and balances.** The variable 'Checks' from the Database of Political Institutions of the World Bank (DPI, 2015). This variable captures the number of decision makers whose agreement is necessary before policies can be changed. Following the description of the variable by Beck et al. (2016), 'Checks' takes value one for non-competitive legislative elections since, regardless of the formal institutional arrangements in a system, institutional checks on officials are unlikely to be binding. For competitive legislative elections, it is increased by the number of veto players in the system. In presidential regimes, it is increased by one for the president and one for each legislative chamber that can exercise veto power. However, if the elections are conducted under closed list rules and the president's party is the largest government party in a particular chamber, then it is assumed that the president exercises substantial control over the chamber and it is not counted as a check. For parliamentary regimes, the variable is increased by one for the prime minister and the

number of parties in the government coalition, including the prime minister's own party. If the system is closed list, however, and the prime minister's party is the largest in the government coalition, then this sum is reduced by one. Finally, 'Checks' is augmented by one for every veto player whose political orientation (left, right or center) is closer to the opposition's political orientation than to the average of the rest of the government.

- **Nighttime light intensity.** Average luminosity (average visible, stable lights and cloud free coverages) for each administrative unit (at the ADM1 and ADM2 levels) and for every sample year. The measure is based on georeferenced images by the DMSP-OLS Nighttime Lights Time Series dataset (version 4) of the National Oceanic and Atmospheric Administration (NOAA). Georeferenced images are available for different satellites and different years. The images are 30 arc second grids, spanning -180 to 180 degrees longitude and -65 to 75 degrees latitude. In case there are two satellites reporting nighttime light intensity, we take their average. Pixels of georeferenced images take values between 0 and 63, with higher values indicating higher light intensity. We calculate the average of these values for each administrative polygon and, following the literature, we add 0.01 when taking the logarithm ([Henderson et al., 2012](#)).
- **Natural resources.** The data on natural resources include information on petroleum fields and mineral facilities. The oil & gas dummy variable takes value 1 when a petroleum field is present in the administrative region (at the ADM1 and ADM2 levels). The mines variable captures the total number of mineral facilities in each administrative region (at the ADM1 and ADM2 levels). The Petroleum Dataset (PETRODATA) is used to identify the location of onshore and offshore oil and gas fields ([Lujala et al., 2007](#)), whereas the Mineral Resources Data System (MRDS) of the United States Geological Survey ([MRDS, 2005](#)) is used to extract data about the number and location of mineral facilities. Data on petroleum fields and mineral facilities include the year of discovery and the year mining began at a new facility, respectively. There is no change in these variables over the sample period and thus, even though our dataset is dynamic, these variables are time-invariant.
- **Road density.** The total length of roads per square kilometer in each administrative unit (at the ADM1 and ADM2 levels), as extracted from the Global Roads Open Access Data Set ([CIESIN](#)).
- **Ports.** A dummy variable taking value 1 in the administrative regions where a port is located (at the ADM1 and ADM2 levels), as extracted from the World Port Index ([WPI, 2011](#)).
- **Birth region.** A dummy variable taking value 1 in the birth regions of the active political leader (at the ADM1 and ADM2 levels), as extracted from the Archigos database ([Goemans et al., 2009](#)).
- **Capital region.** A dummy variable taking value 1 in the regions where the country's capital city is located (at the ADM1 and ADM2 levels). This information is obtained via online searches.

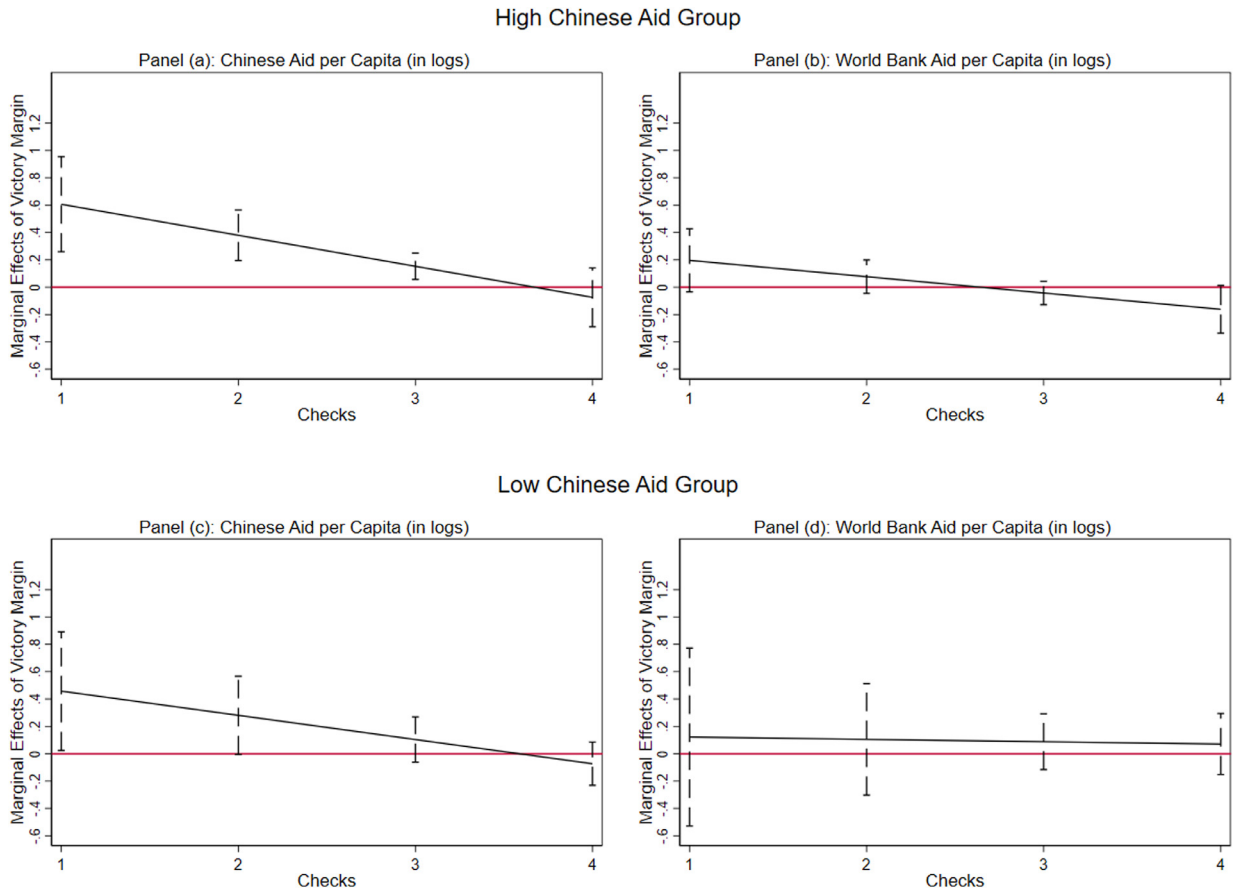
### A.3. Figures and tables

See [Figs. A.1–A.2](#) and [Tables A.1–A.13](#)



**Fig. A.1.** Administrative Boundaries in Sampled African Countries (Baseline Sample).





**Fig. A.2.** Conditional Effects for High/Low Chinese Aid Country Groups. This graph shows the conditional effects of 'Victory Margin' at different values of 'Checks', where the baseline sample is divided into 'High Chinese Aid Group' (panels (a) and (b)) and 'Low Chinese Aid Group' (panels (c) and (d)). The conditional effects are calculated based on the specifications of columns (2), (4), (6) and (8) in Table A.1. All other covariates are held constant at their means. Dashed lines signify 95% confidence intervals. Red horizontal line marks marginal effect of 0.

**Table A.1**

Political Support and Aid Allocation: High/Low Chinese Aid Country Groups.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.								
	High Chinese Aid Group				Low Chinese Aid Group			
	Chinese Aid		World Bank Aid		Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Victory Margin	0.841*** (0.268)	0.833*** (0.264)	0.335* (0.182)	0.316* (0.178)	0.208 (0.263)	0.635** (0.297)	-0.180 (0.401)	0.139 (0.455)
Victory Margin * Checks	-0.227** (0.090)	-0.227** (0.089)	-0.118* (0.065)	-0.119* (0.063)	-0.078 (0.066)	-0.177** (0.081)	0.068 (0.118)	-0.017 (0.130)
R Squared	0.231	0.249	0.321	0.345	0.234	0.281	0.474	0.502
No of Observations	3491	3491	3491	3491	1027	1027	1027	1027
No of Regions	433	433	433	433	113	113	113	113
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline

The 'High Chinese Aid Group' includes Angola, Cameroon, Ghana, Mozambique, Tanzania, Togo and Zambia, whereas the 'Low Chinese Aid Group' includes Botswana, Cape Verde, Guinea-Bissau, Lesotho, Malawi, Sierra Leone and South Africa. Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. Columns (2), (4), (6) and (8) include the full set of control variables in vector X. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.2**

Interactions with Checks and Balances: Majoritarian Elections.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.				
	Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)
Victory Margin	0.946*** (0.215)	0.786*** (0.239)	0.130 (0.189)	-0.012 (0.175)
Victory Margin * Checks	-0.269*** (0.067)	-0.215*** (0.074)	-0.040 (0.062)	-0.003 (0.057)
R Squared	0.230	0.247	0.337	0.366
No of Observations	3884	3884	3884	3884
No of Regions	455	455	455	455
Country-year FE	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Columns (2) and (4) include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.3**

Interactions with Checks and Balances: Excluding Countries with Election Year Inconsistencies.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.				
	Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)
Victory Margin	0.926*** (0.212)	1.037*** (0.225)	-0.126 (0.211)	-0.036 (0.205)
Victory Margin * Checks	-0.258*** (0.065)	-0.282*** (0.070)	0.038 (0.067)	0.004 (0.065)
R Squared	0.238	0.255	0.357	0.379
No of Observations	3812	3812	3812	3812
No of Regions	442	442	442	442
Country-year FE	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Columns (2) and (4) include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.4**

Interactions with Checks and Balances: Dropping Years with Zero Value Chinese Projects.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.				
	Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)
Victory Margin	1.399*** (0.378)	1.539*** (0.358)	0.088 (0.191)	0.227 (0.198)
Victory Margin * Checks	-0.416*** (0.126)	-0.459*** (0.121)	-0.045 (0.065)	-0.094 (0.067)
R Squared	0.215	0.251	0.370	0.394
No of Observations	3328	3328	3328	3328
No of Regions	543	543	543	543
Country-year FE	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Columns (2) and (4) include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.5**

Interactions with Checks and Balances: Project Dummy as Dependent Variable.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.				
	Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)
Victory Margin	0.179*** (0.056)	0.205*** (0.055)	0.148** (0.070)	0.147** (0.071)
Victory Margin * Checks	-0.051*** (0.017)	-0.058*** (0.017)	-0.050** (0.024)	-0.052** (0.024)
R Squared	0.269	0.310	0.494	0.506
No of Observations	4518	4518	4518	4518
No of Regions	546	546	546	546
Country-year FE	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Columns (2) and (4) include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level.

\*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.6**

Interactions with Checks and Balances: Disbursements for World Bank Aid.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.				
	Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)
Victory Margin	0.792*** (0.207)	0.840*** (0.207)	0.125 (0.126)	0.109 (0.118)
Victory Margin * Checks	-0.219*** (0.064)	-0.227*** (0.066)	-0.038 (0.045)	-0.035 (0.041)
R Squared	0.237	0.256	0.374	0.391
No of Observations	4518	4518	4518	4518
No of Regions	546	546	546	546
Country-year FE	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Columns (2) and (4) include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level.

\*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.7**

Interactions with Checks and Balances: Aid per Capita Winsorized at the 95th Percentile.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.				
	Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)
Victory Margin	0.746*** (0.202)	0.796*** (0.200)	0.151 (0.155)	0.165 (0.150)
Victory Margin * Checks	-0.203*** (0.062)	-0.211*** (0.063)	-0.047 (0.053)	-0.055 (0.051)
R Squared	0.240	0.260	0.368	0.389
No of Observations	4518	4518	4518	4518
No of Regions	546	546	546	546
Country-year FE	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Columns (2) and (4) include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level.

\*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.8**

Interactions with Checks and Balances: Adding Observations for Imprecisely Matched Regions.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.				
	Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)
Victory Margin	0.759*** (0.206)	0.805*** (0.207)	0.180 (0.159)	0.188 (0.154)
Victory Margin * Checks	-0.209*** (0.064)	-0.217*** (0.065)	-0.054 (0.054)	-0.060 (0.052)
R Squared	0.236	0.256	0.368	0.390
No of Observations	4609	4609	4609	4609
No of Regions	549	549	549	549
Country-year FE	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline

Columns report estimated coefficients. Columns (2) and (4) include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level.  
 \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.9**

Economic Activity and Aid Allocation.

Dependent Variable: Aid per Capita (in logs). Method: Country-Year FE.						
Checks	Chinese Aid			World Bank Aid		
	All	Low	High	All	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)
Victory Margin	0.208*** (0.048)	0.499*** (0.112)	0.094** (0.045)	0.003 (0.038)	0.142* (0.073)	-0.054 (0.046)
Lagged Lights	0.052*** (0.020)	0.090*** (0.029)	0.031 (0.030)	0.082*** (0.015)	0.164*** (0.022)	0.023 (0.019)
R Squared	0.253	0.279	0.225	0.384	0.411	0.377
No of Observations	4312	1525	2787	4312	1525	2787
No of Regions	546	288	308	546	288	308
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline

Low Checks correspond to values 1 and 2 of the variable 'Checks', whereas High Checks correspond to values 3 and 4 of the variable 'Checks'. Columns report estimated coefficients. All columns include the full set of control variables in vector **X**. Standard errors (in parentheses) are clustered at the region level.  
 \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.10**

Political Support and Aid Allocation in Ghana: Project Dummy as Dependent Variable.

Dependent Variable: Aid per Capita (in logs). Method: Difference-In-Differences.								
	Kufuor Regime				Atta-Mills Regime			
	Chinese Aid		World Bank Aid		Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KR Victory Margin * KR	0.176*** (0.035)	0.176*** (0.035)	-0.081 (0.054)	-0.083 (0.054)				
AMR Victory Margin * AMR					0.078** (0.036)	0.076** (0.037)	-0.187*** (0.067)	-0.187*** (0.066)
R Squared	0.208	0.209	0.494	0.494	0.194	0.195	0.496	0.496
No of Observations	1447	1447	1447	1447	1447	1447	1447	1447
No of Regions	122	122	122	122	122	122	122	122
Region and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Admin. Unit	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2

Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. Columns (2), (4), (6) and (8) include the full set of control variables in vector **Z**. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.11**

Political Support and Aid Allocation in Ghana: Disbursements for World Bank Aid.

Dependent Variable: Aid per Capita (in logs). Method: Difference-In-Differences.								
	Kufuor Regime				Atta-Mills Regime			
	Chinese Aid		World Bank Aid		Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KR Victory Margin * KR	0.891*** (0.197)	0.904*** (0.199)	0.086 (0.081)	0.085 (0.078)				
AMR Victory Margin * AMR					0.365* (0.212)	0.362* (0.216)	-0.160 (0.108)	-0.160 (0.098)
R Squared	0.235	0.237	0.386	0.390	0.220	0.221	0.386	0.390
No of Observations	1447	1447	1447	1447	1447	1447	1447	1447
No of Regions	122	122	122	122	122	122	122	122
Region and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Admin. Unit	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2

Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. Columns (2), (4), (6) and (8) include the full set of control variables in vector **Z**. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.12**

Political Support and Aid Allocation in Ghana: Aid per Capita Winsorized at the 95th Percentile.

Dependent Variable: Aid per Capita (in logs). Method: Difference-In-Differences.								
	Kufuor Regime				Atta-Mills Regime			
	Chinese Aid		World Bank Aid		Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KR Victory Margin * KR	0.893*** (0.197)	0.903*** (0.199)	0.083 (0.124)	0.080 (0.124)				
AMR Victory Margin * AMR					0.365* (0.212)	0.361* (0.215)	-0.242 (0.166)	-0.239 (0.159)
R Squared	0.239	0.241	0.339	0.342	0.223	0.225	0.340	0.343
No of Observations	1447	1447	1447	1447	1447	1447	1447	1447
No of Regions	122	122	122	122	122	122	122	122
Region and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Admin. Unit	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2

Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. Columns (2), (4), (6) and (8) include the full set of control variables in vector **Z**. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

**Table A.13**

Political Support and Aid Allocation in Ghana: Adding Observations for Imprecisely Matched Regions.

Dependent Variable: Aid per Capita (in logs). Method: Difference-In-Differences.								
	Kufuor Regime				Atta-Mills Regime			
	Chinese Aid		World Bank Aid		Chinese Aid		World Bank Aid	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KR Victory Margin * KR	0.908*** (0.197)	0.919*** (0.200)	0.124 (0.135)	0.121 (0.135)				
AMR Victory Margin * AMR					0.389* (0.216)	0.385* (0.220)	-0.251 (0.168)	-0.248 (0.162)
R Squared	0.238	0.239	0.337	0.340	0.223	0.224	0.338	0.341
No of Observations	1474	1474	1474	1474	1474	1474	1474	1474
No of Regions	123	123	123	123	123	123	123	123
Region and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Admin. Unit	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2

Columns report estimated coefficients. Standard errors (in parentheses) are clustered at the region level. Columns (2), (4), (6) and (8) include the full set of control variables in vector **Z**. \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively.

## Supplementary material

Supplementary material associated with this article can be found, in the online version, at [10.1016/j.euroecorev.2020.103430](https://doi.org/10.1016/j.euroecorev.2020.103430).

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