Aid on Demand: African Leaders and the Geography of China's Foreign Assistance

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Abstract

This article investigates whether China's foreign aid is particularly prone to capture by political leaders of aid-receiving countries. We examine whether more Chinese aid is allocated to the birth regions of political leaders and regions populated by the ethnic groups to which leaders belong, controlling for indicators of need and various fixed effects. We have collected data on 117 African leaders' birthplaces and ethnic groups and have geocoded 1,650 Chinese development finance projects across 3,097 physical locations that were committed to Africa over the 2000–2012 period. Our econometric results show that when leaders hold power their birth regions receive substantially more funding from China than other subnational regions. We also find—less robust—evidence that African leaders direct more Chinese aid to areas populated by individuals who share their ethnicity. However, when we replicate the analysis for the World Bank, our regressions show no evidence of favoritism. We also evaluate the impact of Chinese aid on regional development, exploiting time variation in the amount of Chinese aid that results from China's production of steel and geographical variation in the probability that a subnational region will receive such

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aid. We find that Chinese aid improves local development outcomes, as measured by per-capita nighttime light emissions at the first and second subnational administrative level. We therefore conclude that China's foreign aid program has both distributional and developmental consequences for Africa.

1   Introduction

Recent visitors to the village of Yoni, located in Bombali district, Sierra Leone, will find "a wonderful school in the middle of what Africans call 'the bush'," (Acemoglu and Robinson 2012). The school was built with Chinese aid, and Yoni is the hometown of Sierra Leone's President, Ernest Bai Koroma. A fancy new school in the President's hometown could be a simple coincidence, but several studies on patronage politics show that under some conditions, government officials systematically favor their home regions (e.g., Barkan and Chege 1989; Moser 2008; Do et al. 2013; Mu and Zhang 2014; Burgess et al. 2015). Most notably, Hodler and Raschky (2014a) study favoritism in a large sample of subnational administrative regions from all over the world. They find that the birth region of the current political leader has higher levels of nighttime light than other regions, suggesting that the government is directing additional resources to those areas. Higher foreign aid inflows at the recipient-country level amplify this effect. We therefore have some grounds to believe that this "school in the bush" might reflect a broader pattern.

In this paper, we investigate whether and to what extent African political leaders use foreign aid to favor their birth regions and areas populated by their own ethnic group.[1] China is well known for its principle of non-interference in the domestic affairs of recipient countries—a principle that is officially reiterated in the Chinese government's 2014 White Paper on Foreign Aid, which explains that "[w]hen providing foreign assistance, China adheres to the principles of not imposing any political conditions, 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). Therefore, as previous qualitative research suggests, Chinese aid may be particularly easy to exploit for those politicians who engage in patronage politics (e.g., Tull 2006; Mthembu-Salter 2012; Jansson 2013).

We introduce a new georeferenced dataset on the subnational allocation of Chinese development finance projects across Africa over the 2000–2012 period.[2] We use these data to test whether China's non-interference principle allows African leaders to (ab)use

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[1]We thereby contribute to the literature on ethnic favoritism, which goes back to Bates (1974). Many recent studies have focused on African political leaders and the role their ethnicity plays in shaping government policy (e.g., Kasara 2007; Franck and Rainer 2012; Kramon and Posner 2012, 2013; Burgess et al. 2015; De Luca et al. 2015; Francois et al. 2015). For ease of exposition, we will use the term "aid" to refer to all official financing flows (Official Development Assistance and Other Official Flows) and avoid the use of more precise, technical definitions until we reach the empirical part of the paper.

[2]These new data can be used to investigate a number of important questions related to the nature, allocation, and impact of Chinese aid. We make them available at `http://china.aiddata.org/`.

development projects for patronage politics. Specifically, we study whether Chinese aid is disproportionately allocated to the birth regions of the political leaders of recipient countries or to regions populated by individuals who share the ethnicity of those political leaders.[3] We control for a number of subnational variables and various fixed effects. We then replicate our analysis for World Bank projects to gauge whether differences in donor policies and practices might result in different distributional outcomes within recipient countries. The World Bank is a useful benchmark because it is staffed by world-class development professionals and is widely regarded as a leader in development policy and practice (Jenkins 1997; Kremer and Clemens 2016). It also has a more stringent set of project appraisal procedures, which should make it more difficult for political leaders in Africa to use its financial support for political patronage purposes.

Finally, to evaluate whether political favoritism matters for development outcomes, we investigate the effect of Chinese aid on subnational development outcomes. To account for endogeneity, we exploit time variation in the amount of Chinese aid that results from China's production of steel in order to construct an instrumental variable. The Chinese government considers steel to be a strategically important commodity and therefore maintains excess production capacity. This results in a surplus of steel, some of which China then uses for aid projects in Africa. The cross-regional variation of our instrument relies on geographical variation in the probability that a subnational region will receive Chinese aid.

Our results show that the birthplaces of political leaders receive larger amounts of Chinese aid. This result is strongest for total official financing flows from China, which also include non-concessional loans and grants without development intent, going to regions at the first subnational administrative level (ADM1), such as provinces, states, and governorates. Controlling for country-year and region fixed effects, we find that Chinese official financing to a political leader's birth region nearly triples after that individual assumes power. Focusing on a stricter definition of aid that broadly aligns with the OECD's definition of Official Development Assistance (ODA), our fixed-effects regressions still suggest an aid increase of more than 75% to the birth regions of political leaders at the ADM1 level. We also test whether the number of Chinese aid projects and Chinese aid volumes increase at the level of second subnational administrative (ADM2) regions—for example districts or municipalities—from which political leaders originate. We find that aid to the average ADM2 region substantially increases if the country's political leader is born in any

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[3]We use the term "region" in this paper to refer to subnational localities, rather than large geographical groupings of countries.

ADM2 region nested within the same ADM1 region. Political favoritism seems to extend to the larger ADM1 regions rather than being narrowly restricted to the more local ADM2 regions. We find similar evidence that Chinese aid is directed to areas populated by the ethnic group to which political leaders belong. However, this result is not robust to region fixed effects.

On the contrary, there is no evidence that World Bank funding flows disproportionally to the political leaders' birth regions or to areas populated by the ethnic group to which political leaders belong. Our findings are thus consistent with the Chinese government's flexible, "on demand" approach to foreign aid and with World Bank project preparation policies that are designed to target development outcomes and prevent aid from being diverted for personal or domestic political reasons. Chinese aid appears to allow recipient government leaders to direct these external resources to their home regions, while World Bank aid appears to be less manipulable in this respect.

Finally, we find that Chinese aid improves subnational development outcomes, as captured by per-capita nighttime light emissions. Relying on estimates of the elasticity between nighttime light emissions and GDP of around 0.3 taken from the previous literature, our results show that a 10% increase in Chinese aid increases regional GDP by approximately 0.24%. We therefore conclude that the political favoritism we detect in our allocation regressions has measurable development consequences.

This paper builds upon and contributes to the empirical literature on aid allocation, which traces its origins to McKinlay and Little (1977).[4] Dreher et al. (2011) compare the cross-country allocation of the so-called "new" donors (excluding China) with the "traditional," mainly Western donor countries organized in the Development Assistance Committee of the OECD (OECD-DAC). They find that "new" and "traditional" donors behave similarly, but the "new" ones are less responsive to recipient needs.[5] Dreher and Fuchs (2015) analyze data on Chinese foreign aid projects at the recipient-country level from various sources and find that—consistent with China's principle of non-interference in internal affairs—Chinese aid is not influenced by the democracy status or other governance characteristics of recipient countries. Contrary to the conventional wisdom, they also find that China's aid allocation is not primarily motivated by a desire to access natural resources in recipient countries. Overall, at the country level, Chinese aid does not seem

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[4]Prominent contributions include Maizels and Nissanke (1984), Alesina and Dollar (2000), Kuziemko and Werker (2006), and Faye and Niehaus (2012). On the World Bank, see Frey and Schneider (1986), Dreher et al. (2009), and Kilby (2009).

[5]While the terms "new donor" or "non-traditional donor" are frequently used for donors outside the OECD-DAC like China and India, both countries' first aid deliveries took place in the 1950s.

to be allocated very differently from Western aid, as both are driven by the respective donor's political and commercial interests. In contrast to previous work, we compare the subnational allocation of aid from China and the World Bank, which allows us to test whether the allocation of Chinese aid *within* recipient countries looks substantially different when compared to that of one of the most important "traditional" donors.[6]

We are not the first to investigate the allocation of foreign aid within countries. However, other contributions that rely on subnationally geocoded aid data focus on a single country (e.g., Franken et al. 2012; Dionne et al. 2013; Briggs 2014; Jablonski 2014; Nunnenkamp et al. forthcoming), or on a cross-section of subnational localities from different countries (e.g., Powell and Findley 2012; Öhler and Nunnenkamp 2014). In this paper, we analyze geocoded data for a large number of recipient countries over a longer period of time. This research design provides significant advantages over previous studies. Focusing exclusively on cross-sectional variation, a positive association between the location of aid projects and the location of a leader's birthplace (or ethnic region) could simply be driven by permanent or highly persistent region-specific characteristics. We rely on variation across regions and over time in tandem with binary indicator variables for the years just prior to and after the political leader originates from a certain region. This approach allows us to identify potential causal effects of the political leaders' home region on the amount of aid that region receives. The second difference between this paper and previous contributions is our focus on Chinese aid rather than aid allocated by "traditional" donors.

Beyond allocation, we contribute to the literature on aid effectiveness.[7] As previous research on the impact of aid relies almost exclusively on data from Western donors represented in the OECD's DAC and multilateral organizations,[8] we know very little about whether Chinese aid is more or less effective than "traditional" aid. China is often accused of using aid to curry favor with political leaders of developing countries rather than to improve development outcomes (e.g., Tull 2006; Naím 2007). Others praise China for its responsiveness to "recipient" needs and its willingness to get things done in a timely manner and reduce the administrative burden placed on overstretched public bureaucracies in

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[6]Ideally, one would want to compare the allocation of Chinese aid with a Western *bilateral* donor such as the United States. However, such georeferenced aid project data are unavailable for a large set of recipient countries.

[7]Recent published studies that attempt to address endogeneity and get traction on the link between allocation and effectiveness at the country level include Rajan and Subramanian (2008), Clemens et al. (2012), and Brückner (2013). See Doucouliagos and Paldam (2009) for a review and meta-analysis of earlier studies on aid effectiveness. The only regional-level aid effectiveness study for a broad set of countries focuses on the World Bank (Dreher and Lohmann 2015) and finds no significant effects of aid.

[8]For an exception (on Arab donors), see Werker et al. (2009).

the developing world.[9] Some have even suggested that Chinese aid could be less prone to waste, fraud, and abuse—and more effective in promoting economic growth—than aid from "traditional" donors because China maintains control over the activities it funds from the project initiation stage to the project completion stage (e.g., Bräutigam 2009, 2011b).[10]

The remainder of this paper is structured as follows: Section 2 explores the potential aid allocation and effectiveness implications of China's principle of non-interference. In Section 3, we introduce our method of estimation and data on leader characteristics and Chinese aid projects at the subnational level. Section 4 presents our empirical findings on the allocation of Chinese aid and a comparison with World Bank projects, while Section 5 presents the results of the aid effectiveness regressions. In Section 6, we outline next steps and conclude.

2   The Demand Side of China's Aid Allocation

A still small but growing body of research analyzes the motives that drive China's aid provision. Dreher and Fuchs (2015), for example, find that Chinese allocation decisions are significantly influenced by both political and commercial interests but not by a recipient's institutional characteristics.[11] Dreher et al. (2015) compare the determinants of China's ODA-like flows to its other official financing (as we do in the analysis provided below). They show that China's cross-country allocation of highly concessional flows is primarily driven by political considerations, while economic interests shape the allocation of less concessional types of official financing.

However, the motivations of aid donors provide only part of the picture. This should be particularly true in China's case, as the allocation of its aid is purportedly based on requests from the governments of recipient countries. During our own interviews at China's Ministry of Commerce, which is China's lead aid agency, ministry officials emphasized that "the initiative generally comes from the recipient side."[12] To the extent that this is true,

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[9]See Dreher and Fuchs (2015) and Strange et al. (forthcoming) for references.

[10]In many cases, China remains involved in the management of projects even after they have been completed (e.g., Bräutigam 2009).

[11]China's disregard of institutional characteristics could still harm democracy and governance in recipient countries. Kersting and Kilby (2014) find eligibility for Chinese aid to be negatively associated with democracy. Bader (2015) finds that trade—but not other forms of China's economic cooperation—stabilizes autocracies.

[12]Authors' interview in June 2013. Similarly, officials within the Ministry of Health report that they "send medical teams to the areas of the country that are selected by the recipient government" (authors' interview in October 2014).

it creates scope for recipient governments to use aid strategically (Bueno de Mesquita and Smith 2007; Moss et al. 2007; Wright 2010; Werker 2012). Leaders may not direct aid to projects where developmental returns can be maximized but rather where their personal and parochial interests are best served (Cohen 1995; Moss et al. 2007; Wright 2010; Briggs 2014). Werker (2012) also argues that aid windfalls render governments less accountable to their voters, encouraging them to choose policies that a majority of the voters would not support. As such, there is a risk that China's demand-driven policy could come at a substantial cost to the citizens of recipient countries.

Tull (2006) suggests that governing elites in Africa might be the biggest winners of China's increasing engagement with the continent. A request-based system of aid project preparation should, in principle, provide opportunities for political leaders to overtly or surreptitiously promote a subnational distribution of funding that helps cement allegiances with existing supporters and extend patronage networks to other politically relevant groups. This vulnerability should apply to any donor that grants its counterpart governments a large amount of discretion in where to situate development projects financed from abroad. However, China may be particularly vulnerable to this type of patronage because it distinguishes itself as being more responsive to the demands of its partner governments. Tull (2006: 467) notes that "Chinese aid tends to benefit the governments of receiving countries more directly than the policies of Western donors, who are preoccupied with the reduction of poverty."[13] We test this hypothesis by comparing the allocation of Chinese "aid" with the allocation of World Bank aid below.

Our central argument is that the demand-driven nature of China's aid allocation process gives the political leadership of host countries substantial leeway to allocate funds to activities and locations that best suit their own interests. Therefore, understanding the nature of the Chinese aid allocation process is key.[14] The process typically begins when the host government proposes a project to the Economic and Commercial Counselor's office attached to China's in-country diplomatic mission. This office then submits the government's application—if it meets a minimum viability standard—to the Ministry of Commerce and the Ministry of Foreign Affairs in Beijing. A team of technical experts from the Ministry of Commerce then travels to the country that requested support to undertake a project and budget feasibility assessment in consultation with the domestic authorities. Upon

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[13]As Bräutigam (2011a: 761) points out, this Chinese way of approaching country ownership "can lead to 'prestige' projects that do not appear to be poverty-reducing." Indeed, presidential palaces and football stadiums figure prominently among China's aid projects.

[14]Our description of this process relies heavily upon Davies et al. (2008) and Corkin (2011).

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their return to Beijing, the technical team initiates an inter-agency consultation process and prepares a final project proposal for the State Council's determination. If the State Council authorizes the project, the Ministry of Finance transfers funds to the Ministry of Commerce and the procurement process begins. In cases where the host government is seeking a concessional loan worth more than RMB 20 million, its Ministry of Finance is expected to submit an application directly to the Export-Import Bank of China (China EXIM Bank), which triggers the implementation of a project feasibility assessment. If the proposed project is deemed feasible, China EXIM Bank makes a recommendation to the Chinese Ministry of Commerce that the Chinese government negotiate a "framework agreement" with the proposed borrower country, which is then followed by a project-specific loan agreement with China EXIM Bank.

Despite of these formal procedures, Dornan and Brant (2014) note that relatively little effort is made to conduct rigorous economic analysis of potential projects and that project appraisal processes more generally remain weak. China's Ministry of Commerce tacitly acknowledged this weakness in April 2014 when it publicly released new policy guidance entitled "Measures for the Administration of Foreign Aid," which calls for stronger project appraisal, supervision, and evaluation processes (MOFCOM 2014).

Chinese aid is also particularly vulnerable to domestic political capture because of the ways in which the Chinese authorities directly negotiate aid packages and projects in high-level meetings with political leaders rather than coordinating their assistance with other donors and technocrats within line ministries (AfDB et al. 2011: 126).[15] Bräutigam (2011b) explains that "[f]or the Chinese, ownership starts (and sometimes ends) at the top. In cases where leaders do not coordinate with ministries, this can cause problems, as in Liberia where a president asked the Chinese to build a hospital upcountry, leaving the Liberian health ministry scrambling to figure out staffing for the remote location."[16]

The demand-driven selection of Chinese aid projects is best understood in the context of one of the main principles of China's foreign aid policy: non-interference in the internal affairs of recipient countries and respect for their sovereignty. The principle can be traced back to the Final Communiqué from the 1955 Bandung Conference. It is still highlighted in the preface of the most recent (2014) Chinese White Paper on Foreign Aid: "[w]hen providing foreign assistance, China adheres to the principles of not imposing any political

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[15]China is currently in the process of developing aid strategies for each country, but they are unlikely to be made public (authors' interview with Chinese aid expert in Beijing, September 2014).

[16]Additionally, China does not regularly participate in the various in-country donor coordination meetings and prefers staying outside the aid architecture dominated by the OECD (Bourguignon and Platteau 2014).

conditions, 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).

While aid from "traditional" donors could also be vulnerable to political manipulation (Cohen 1995; Briggs 2014; Masaki 2015), aid from "traditional" sources appears to be generally less "demand-driven" than Chinese aid. Both "traditional" donors and China rhetorically embrace the principle of "country ownership," but there appears to be substantial differences in the way this principle is operationalized (e.g., Faust 2010). Nissanke and Söderberg (2011: 26) point out that "Chinese arrangements appear to be [...] much more flexible than the mechanisms offered by traditional donors, since the procedure adopted is seen to promote the sense of local ownership of aid-funded projects. Project selection is request-based: projects are initiated by borrowing countries, dependent on their preference, priority and circumstances." By contrast, Western donors and development banks are known for being more "supply-driven" in the design and delivery of development programs (Easterly and Pfutze 2008). They are also known for having more well-developed project design, due diligence, and evaluation standards and procedures in place (Jenkins 1997; OECD 2015).[17]

China's political non-interference approach seems to enjoy particularly strong support among many African politicians. Consider the following statement from a Government of South Sudan official: "the U.S. and our other [Western] friends regularly tell us with certainty what we need. The Chinese appear more open to talking and to hearing what we want" (ICG 2012: 8). With a bit more of a rhetorical flourish, President Museveni of Uganda said: "[t]he Western ruling groups are conceited, full of themselves, ignorant of our conditions, and they make other people's business their business, while the Chinese just deal with you as one who represents your country, and for them they represent their own interests and you just do business" (Halper 2010: 100).

While African leaders have more discretion in the ways that they can use Chinese aid as compared to aid from "traditional" donors, the presence of discretion does not necessarily mean that governing elites will use it to steer aid from China to politically important groups. Leaders could use this discretion to address key poverty reduction and economic development challenges that have not attracted sufficient funding from Western donors. Indeed, many scholars, policy commentators, and journalists claim that African govern-

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[17]The United States and some European donors are also known for intentionally "bypassing" recipient governments that are corrupt or lacking strong public sector management institutions (Dietrich 2013, 2016; Knack 2014).

ments are using Chinese assistance to extend the reach and improve the quality of state-run electricity grids; strengthen water and sanitation systems; and establish or rehabilitate the highways, railroads, bridges and ports necessary for domestic and international commerce (e.g., Foster et al. 2008; Ravallion 2009; AfDB et al. 2011).

However, there is significant qualitative evidence that political leaders have manipulated Chinese aid for domestic political reasons (Tull 2006; Downs 2011). Mthembu-Salter (2012: 20-21), for example, argues that the activities of two China EXIM Bank-financed state-owned enterprises, China Railways Construction Company (CREC) and Sinohydro, helped President Kabila to win the 2011 election in the Democratic Republic of the Congo (DRC): "Kabila campaigned on a ticket of 'cinq chantiers' (five tasks), which include[d] new and better infrastructure, but without the high-profile efforts of CREC and Sinohydro to date he would have had precious few projects with which to seek to impress the electorate. There can be no question that the 'goodwill' decision of Chinese state-owned companies to lend money and start building three years before the poll date provided invaluable assistance to Kabila's successful re-election campaign." Jansson (2013: 158-159) elaborates on this point, explaining that CREC and Sinoyhdro "[took] important risks to meet [...] political pressures from the circle around President Kabila" and quickly implemented high-profile infrastructure projects in politically significant areas of the country "to demonstrate [President Kabila's] ability to deliver concrete results to the disillusioned Congolese electorate" (Jansson 2013: 158).[18]

China's role in Sudan also provides a useful illustration. Over the past ten to fifteen years, Sudan has received billions of dollars of Chinese development finance. Many of these projects have been located within the so-called "Hamdi Triangle," a region in the Nile River Valley between the cities of Dongola, Sennar, and El Obeid (in North Kordofan) that is considered to be the heartland of the Arab Riverine tribes and the domestic political base of the ruling National Conference Party (NCP) (Roessler 2013). President Bashir's hometown of Shendi, which lies along the bank of the Nile River approximately 150 kilometers northeast of Khartoum, falls squarely within the Hamdi Triangle (Verhoeven 2015). This area of the country assumed special political significance after 2005 when the authorities in Khartoum signed a Comprehensive Peace Agreement (CPA) with the Sudan People's Liberation Army (SPLA) that called for presidential and legislative elections in 2010 and

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[18]It is also telling that in DR Congo the presidency itself rather than line ministries administers Chinese projects. Jansson (2011: 6) notes that "Chinese companies that are active in the DRC have few or no direct links to the Chinese government, although many nurture close connections with the Congolese establishment and President Kabila's entourage." A former European embassy official in the DRC thus concluded: "Chinese aid benefits those who are in power" (authors' interview, September 2014).

a referendum on South Sudan's independence in 2011. In recognition of the domestic political threats posed by the presidential election and the referendum, Abdel Rahim Hamdi (a political strategist for the NCP and former Minister of Finance) laid out a "grand strategy" for domestic political survival at a 2005 NCP conference. In a paper entitled "The Economic Paper for the ruling National Congress: Future of Foreign Investment in Sudan," he called for concentrated investment in the area between Dongola, Sennar, and El Obeid (Hamdi 2005).[19] He argued that the ruling party's electoral fortunes would hinge on its ability to deliver jobs opportunities and public services to these core constituents in the Nile River Valley. In the years following the adoption of this strategy, Chinese development and investment projects focused heavily in these areas and other pro-NCP constituencies (Roessler 2013).

However, while individual cases like the DRC and Sudan demonstrate the plausibility of our argument and may help to illuminate the political-economy logic of resource allocation within clientelist systems, we seek to test these claims using systematic evidence and quantitative methods. Do political leaders in recipient countries systematically locate Chinese aid projects in areas that align with their personal and domestic political interests? And do they have more discretion over Chinese aid compared to aid from "traditional" donors, such as the World Bank? We now turn to our data and the econometric analysis.

3   Method and Data

Our analysis covers subnational units of 47 African countries over the 2000–2011 period.[20] These subnational units are administrative regions at the first and second subnational levels. ADM1 regions generally correspond to provinces, states, or governorates, while

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[19]When Hamdi penned the NCP's regime consolidation strategy in 2005, he also showed a keen awareness of the ways in which Western donors and investors would differ from their non-Western counterparts in the degree to which they would enable or constrain the authorities' implementation of this strategy: "Financial flows [...] from [Western] institutions will be characterized by the following: they will be late; will be far less than promised; they will be surrounded by rules and bureaucracy. [...] Investment funds will go to areas that are already predetermined in the [CPA]; this is, to the geographical south with its defined borders, Nuba Mountains, Southern Blue Nile. Moreover, these investment funds will be supervised by certain Commissions which ensure that they go to the specified zones only. Due to these facts, foreign investment will remain out of our hands and will not benefit the North much. In a sharp contrast to that, [non-Western] investment, both official and private will go to the Geographical North" (Hamdi 2005).

[20]We exclude Western Sahara, a disputed territory, Somalia for the absence of a central government, and the five small island states of Cape Verde, Comoros, Mauritius, São Tomé and Príncipe, and Seychelles. Given potential concerns about the comprehensiveness of the 2012 data of the 1.1 version of AidData's China in Africa dataset, we follow Strange et al. (forthcoming) and exclude 2012.

ADM2 regions usually consist of counties, districts, or municipalities. The Database of Global Administrative Areas (GADM) provides shapefiles with information on subnational administrative regions and their boundaries. There are 709 ADM1 regions and 5,835 ADM2 regions in the 47 African countries covered in our sample.[21] We also use ethnic regions as alternative subnational units. These ethnic regions are based on the Geo-referencing of Ethnic Groups (GREG) data project by Weidmann et al. (2010). Overall, there are 609 different ethnic regions in our 47 African countries.[22]

In order to test whether leaders' birthplaces and ethnic relationships matter for the allocation of Chinese aid, we estimate two sets of regressions using ordinary least squares (OLS):

$$Aid_{ict} = \alpha_{ct} + \sum_j \beta_j X_{ic}^j + \gamma Birthregion_{ict} + \epsilon_{ict}, \tag{1}$$

$$Aid_{ict} = \alpha_{ct} + \delta_{ic} + \gamma Birthregion_{ict} + \epsilon_{ict}, \tag{2}$$

where α_{ct} represents country-year fixed effects and δ_{ic} region fixed effects.

In what follows, we explain the remaining components of this regression framework. Our dependent variable Aid_{ict} is the natural logarithm of Chinese official finance commitments allocated to region i in country c and year t in constant 2009 US\$.[23] This variable is constructed based on the dataset in Strange et al. (forthcoming), who provide project-level information about Chinese official finance activities in African countries.[24] These data were assembled using AidData's Tracking Underreported Financial Flows (TUFF) method, which synthesizes and standardizes a large amount of unstructured information

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[21]The GADM database includes subnational boundaries only at the ADM1 level for Egypt, Equatorial Guinea, Lesotho, Libya, and Swaziland. In our estimates at the ADM2 level, we use ADM1 regions for those countries instead. Excluding those countries from the AMD2 level analysis does not change the results qualitatively. The borders of these divisions across Africa are shown in Figure B.1 in Appendix B, with strong borders representing ADM1 regions, and light borders ADM2 regions.

[22]We collapse different polygons (or regions) of the same country that share the same ethnic composition into one region. Most regions contain only one ethnic group, 94 regions contain two, and one region has three ethnicities. We have no information on the relative size of these groups and therefore code a region to be the leader region if the leader shares the ethnicity of any of the groups in a region.

[23]We exclude flows coded as non-binding pledges or suspended projects. To avoid taking the log of zero, we added a value of US\$ 1 before taking logarithms. We also tried estimating our models with Poisson pseudo-maximum likelihood (PPML) instead. However, most regressions including region fixed effects did not converge. Regressions without these fixed effects show results similar to those presented below. Note that we do not scale aid with population or development given that donors decide about how to allocate a certain amount of aid in light of a number of potential factors, among them population and development. In line with the bulk of the aid allocation literature, we therefore control for population and development on the right-hand side rather than scaling our dependent variable by one of them.

[24]Specifically, we rely on AidData's Chinese Official Finance to Africa Dataset, Version 1.1, which is available at `http://china.aiddata.org/datasets/1.1`.

in the public domain.[25]

Despite the short time since the dataset's public release, it has already been used in a number of publications at the country-level (e.g., Hendrix and Noland 2014; Dreher and Fuchs 2015; Hernandez 2016; Hsiang and Sekar 2016; Kilama 2016). In total, the dataset covers 1,650 projects committed to 49 African countries, amounting to approximately US\$ 83.3 billion in official financing over the 2000–2012 period.[26] The largest recipients of Chinese official financing are Ghana, the DRC, and Ethiopia, with registered flows in the range of 7.9–12.1 billion constant 2009 US\$ (Strange et al. forthcoming).

In order to take the data to the subnational level, we georeferenced the project-level data from version 1.1 of AidData's Chinese Official Finance to Africa dataset using the method described in Strandow et al. (2011). This method relies on a double-blind system, where two coders employ a defined hierarchy of geographic terms and independently assign uniform latitude and longitude coordinates, information about the precision of the data, and standardized names to each geographic feature of interest. If the locations chosen by the two coders are not identical, then a senior researcher identifies the source of discrepancy and assigns the appropriate geocode. This process of arbitration between two independent coders by a third ensures strict quality control, minimizing missed or incorrect locations. For projects with more than one location, we georeferenced all locations.[27] Our application of this geocoding method yielded 1,898 project locations geocoded at the ADM1 level and 1,575 project locations at the ADM2 level.[28] In the analysis based on ethnic regions, we

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[25]See Strange et al. (2014) for a detailed description of this open-source data collection method. One might argue that the open-source nature of these data could threaten the reliability of our empirical tests. To the extent that leaders' birthplaces get better coverage in the sources used in Strange et al. (forthcoming), a positive effect could reflect greater coverage rather than more projects. This may be particularly likely for small projects (as larger projects will receive some coverage in non-birth regions also). To test whether we are likely to miss small projects outside the political leaders' birth regions, we replicate our region fixed effects regressions with (log) average project size as the dependent variable. We find that project size does not change when a new leader originates from a region. Therefore, it is unlikely that a positive birthplace coefficient in our main regressions results from a large number of additional small projects in leaders' birthplaces but not elsewhere. In our aid effectiveness regressions below, we test whether aid committed to birth regions is less effective compared to aid committed to other regions. To the extent that aid reporting rather than the volume of aid increases in the leaders' birth regions, the aid "committed" to birth regions should be less effective in promoting development (as larger amounts of aid would not flow to these regions but would merely be more likely to be reported there). This is not what we find.

[26]Unsurprisingly, the database does not contain any development projects in the remaining four African countries that recognize the Republic of China (Taiwan) rather than the Beijing government during these years. These countries are Burkina Faso, the Gambia, São Tomé and Príncipe, and Swaziland.

[27]Because we do not observe financial values at the project-location level but only at the project level, we spread project amounts equally across all locations identified in each project.

[28]These numbers are about half the total number of locations our database covers. This is because there

only include the 1,296 project locations for which our geographical information is even more precise than the ADM2 level, such as an exact location or some nearby location.

We distinguish between three definitions of our dependent variable. First, we analyze the allocation of Chinese "aid" in the broadest sense as all official financing activities coded in Strange et al. (forthcoming) as "ODA-like" or "OOF-like" according to the OECD definitions of Official Development Assistance (ODA) and Other Official Flows (OOF).[29] The allocation of official finance across ADM1 regions is shown in Figure 1. Second, we restrict our analysis to those flows that are identified as being ODA-like. A caveat for these two definitions is that 35% of the projects lack information on their respective financial values. Although the bias is likely to be negligible because most of the missing values should correspond to small projects that did not attract much public attention, we take two actions to account for this weakness of the data. If we know there are Chinese projects in a particular subnational locality but we have no information about any of their monetary amounts, we set Aid_{ict} to missing.[30] We also rely on a third dependent variable that assumes a value of one if a project has been committed to a subnational region in a given year and zero otherwise.[31] This alternative measure comes with the disadvantage that it does not account for the financial size of the projects, but it is useful in that it also covers all projects for which we do not have financial values.

Figure 1 around here

Comprehensive geocoded data for bilateral, Western donors are not available for long periods of time or for the entire African continent; therefore, we limit our analysis to a comparison with the World Bank, one of the largest "traditional" donors in Africa and one that is known for screening projects based on rigorous economic analysis and due diligence

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is imprecise information on the exact locations of projects.

[29]The OECD-DAC defines ODA as "[g]rants or loans to [developing] countries and territories [...] and to multilateral agencies which are: (a) undertaken by the official sector; (b) with promotion of economic development and welfare as the main objective; (c) at concessional financial terms (if a loan, having a grant element of at least 25 per cent). In addition to financial flows, technical co-operation is included in aid" (OECD DAC glossary, available at http://www.oecd.org/dac/dac-glossary.htm). It defines OOF as "[t]ransactions by the official sector with [developing] countries [...] which do not meet the conditions for eligibility as Official Development Assistance, either because they are not primarily aimed at development, or because they have a grant element of less than 25 per cent" (OECD DAC glossary). Our measure of Chinese "aid" includes official financing activities that cannot clearly be attributed to either ODA or OOF and are therefore coded as "Vague (Official Finance)" in Strange et al. (forthcoming). Our measure excludes projects coded as "Official Investment" or "Military Aid."

[30]Our results are qualitatively unchanged if we set Aid_{ict} to zero in these cases.

[31]Figure B.2 in Appendix B shows a map of the number of Chinese aid projects per ADM1 region.

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in vetting and preparing its projects (e.g., Jenkins 1997; Deininger et al. 1998). We rely on a new georeferenced dataset provided by AidData (2015) in collaboration with the World Bank that consists of all World Bank projects approved between 2000 and 2011. In Africa, the dataset includes 533 projects and 7,519 project locations, comprising total commitments of US$ 43.4 billion.[32] The dataset includes the date of approval for all projects and the amounts committed over their duration. We transform these values to constant 2009 US$. Again, we distinguish between three definitions of our dependent variable to mimic our approach for Chinese aid. We first analyze the total value of World Bank financing, which includes both concessional flows (from the International Development Association, IDA) and non-concessional flows (from the International Bank for Reconstruction and Development, IBRD), then analyze IDA volumes separately, and finally look at a binary indicator variable that takes a value of one if the World Bank commits a project to a particular subnational region in a given year, and that is zero otherwise.[33]

Our main variable of interest is a binary indicator variable $Birthregion_{ict}$. If the units of observation are ADM1 regions, then $Birthregion_{ict}$ is equal to 1 if the political leader of country c in year t was born in administrative region i and 0 otherwise. If the units of observation are ADM2 regions, then it is equal to 1 for all ADM2 regions i that are part of the ADM1 region in which the political leader was born and 0 otherwise.[34] We apply the definition of countries' effective leaders from Goemans et al.'s (2009) Archigos dataset, updated in Dreher and Yu (2016).[35] In order to assign latitude and longitude coordinates to the birthplaces of the political leaders of African countries, we follow Strandow et al. (2011). We are able to attribute leaders to 76.7% of the country-years covered at the ADM1 level; the remaining leaders are either foreign-born or we were not able to gather sufficiently precise information to place them in ADM1 regions. Figure 4 shows a map of

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[32]See Findley et al. (2011) for a detailed description of an earlier release of these data.

[33]We exclude those projects that are nation-wide in scope for which no or unclear information on their location is provided and projects that are allocated to the central government and therefore cannot be attributed to a specific region. In total, approximately 40% of all projects are assigned to a distinguishable location (Dreher and Lohmann 2015). Figures B.3 and B.4 in Appendix B show maps of the allocation of World Bank aid across African ADM1 regions. The correlation between Chinese aid and World Bank aid is positive but low (0.062 for total amounts, 0.123 for concessional flows, and 0.046 for the project dummies).

[34]At the ADM2 level, in the Appendix we alternatively define $Birthregion_{ict}$ to be equal to 1 if the political leader of country c in year t was born in ADM2 region i and 0 otherwise, in analogy to our definition of $Birthregion_{ict}$ at the ADM1 level.

[35]Archigos applies the following coding rules: The effective ruler corresponds generally to the prime minister in parliamentary regimes, to the president in presidential regimes, and to the chairman of the party in communist states. Information on the dates of leaders' entrance and exit from power is taken from Archigos and verified using DBpedia and, if necessary, Wikipedia.

the birth regions of political leaders across the African continent at the ADM1 level.

For the analyses based on ethnic regions, we replace $Birthregion_{ict}$ in Equations 1 and 2 with $Ethnicregion_{ict}$, an analogous indicator variable that is equal to 1 if the political leader of country c in year t is a member of the ethnic group that lives in ethnic region i and 0 otherwise. We use data on leaders' ethnic groups from Parks (2014)[36] and code their latitudinal and longitudinal coordinates using Geonames.[37] Appendix A lists all domestic-born leaders together with their administrative birth regions and ethnicities.

X_{ic} represents our time-invariant control variables. We include nighttime light intensity as a proxy for economic activity at the subnational level.[38] The National Oceanic and Atmospheric Administration (NOAA) provides annual data for pixels that correspond to slightly less than one square kilometer on a scale from 0 to 63, with higher values representing higher levels of nighttime light.[39] The variable $Light2000_{ic}$ corresponds to the logarithm of the average nighttime light intensity of the pixels in region i of country c in 2000, that is at the beginning of our sample period.[40]

We further control for the geographical size and population size of subnational regions. The variable $Area_{ic}$ is directly calculated from the shapefile of subnational boundaries, while $Population2000_{ic}$ is based on high-resolution data on the spatial distribution of the world population in 2000 by the Center for International Earth Science Information Network (CIESIN). We add the binary variable $Capitalregion_{ic}$ that takes the value of one if the capital city of country c is located in region i in order to account for the specific role played by the country's capital. To test the claim that Chinese aid is driven by a desire for

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[36]We use biographies of political leaders provided by the Barcelona Centre for International Affairs (`http://www.cidob.org/es/documentacion/biografias_lideres_politicos`) and the DBpedia profile page of the respective leader (`http://dbpedia.org`) as secondary sources.

[37]See `http://www.geonames.org`. We record locations with five decimal places of precision. As secondary source we rely on the American National Geospatial Intelligence Service (NGA) (`http://geonames.nga.mil/ggmagaz`).

[38]Changes in nighttime light intensity have been shown to be highly correlated with changes in regional GDP at both the country level and the level of subnational localities (Henderson et al. 2012; Hodler and Raschky 2014a). A main advantage of nighttime light intensity is its availability at the regional level, which is particularly useful in the African context where regional GDP estimates are typically poor or unavailable.

[39]Weather satellites from the U.S. Air Force circle the Earth 14 times a day and measure light intensity. The NOAA uses observations from evenings during the dark half of the lunar cycle in seasons when the sun sets early. It removes observations that are likely to be affected by, e.g., cloud coverage, fires or other ephemeral lights.

[40]We follow Michalopoulos and Papaioannou (2013, 2014) and Hodler and Raschky (2014a, 2014b) in adding 0.01 to the average nighttime light intensity before taking its logarithm. Doing so ensures that we do not lose observations with a reported nighttime light intensity of zero. Using the year 2000 minimizes potential reversed causality. When we instead include lagged yearly nighttime light in our regressions, the results are qualitatively the same.

access to natural resources, we compute $Mines_{ic}$, which is defined as the log of the sum of mineral facilities in each subnational region i according to the Mineral Resource Data System of the United States Geological Survey (USGS 2005).[41] As a second indicator of resource wealth, the variable $OilGas_{ic}$ takes a value of one if parts of an oil or gas field overlap with the area of subnational region i (data from Lujala et al. 2007). In order to account for China's potential interest in facilitating the import and export of goods to and from Africa, we construct a binary indicator variable $Port_{ic}$ that assumes a value of one if a port is located in region i using data from the World Port Index 2011 (NGA 2011). We compute the total length of roads per square kilometer ($RoadDensity_{ic}$) using geographic data from CIESIN (2013). One would expect this variable to obtain a negative coefficient if Chinese projects seek to address local development needs. A positive coefficient might reflect the cost and logistical difficulty of implementing projects in less accessible parts of a country.

Comparing the models in Equations 1 and 2, the former has two advantages. First, the omission of region fixed effects allows us to also exploit between-region variation, which might be important to identify the relationship between leaders' birthplaces (or ethnic regions) and aid absent large variation in the leaders' birth regions (or ethnic regions).[42] Second, this specification allows us to include variables that vary across regions exclusively. While the focus of our analysis is on leaders' birth and ethnic regions, the inclusion of these variables facilitates comparison with the country-level literature on the allocation of aid. A shortcoming of this approach is that a statistically significant effect of these regions on aid might be spurious and could simply reflect the fact that certain regions receive more aid than others for reasons unrelated to leaders that we do not control for in our models. Equation 2 precludes such spurious results by exploiting region-specific variation over time exclusively. While this specification is the more rigorous one, we lose substantial variation, which makes identifying the relationship between aid and leaders' birth regions more difficult. We also go a step further and control for the last year before the political leaders came to power as a placebo test and the first year after they were out of power. In all allocation equations, we cluster standard errors by leaders.[43]

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[41]This cross-sectional dataset on historical and current mining facilities includes mines, plants, mills, and refineries of many mineral commodities such as coal, iron ore, copper, gold, silver, and zinc. We added one before taking the log.

[42]Leader changes are infrequent. In our sample, we observe 39 changes in birth regions at the ADM1 level.

[43]Note that country-years with power transitions or without domestic-born leaders receive a separate country-specific leader ID.

Table 1 provides summary statistics at the level of ADM1 regions. On average, each African region receives 0.2 Chinese projects (not shown in the table) or approximately US$ 6.5 million in Chinese funding per year, of which US$ 1.5 million arrives in the form of ODA-like flows. Of the subnational regions in our sample, 10% host at least one Chinese project at any time on average, and 6.7% of region-years are coded as being the respective leader's birth region.

<div align="center">Table 1 around here</div>

4   Results

Table 2 shows the results for Chinese aid from our regressions of Equation 1, which includes country-year fixed effects but not region fixed effects. Column 1 considers total flows of Chinese official financing at the ADM1 level. In column 2, we test whether more official financing (aid and less concessional sources of state funding) from China is allocated to the average ADM2 region located in the ADM1 region where the leader was born. This is different from column 1, as it allows us to test whether the benefits of one ADM2 region being a birth region are spread across all regions within the same ADM1 region (rather than being narrowly concentrated on one or a few).

Starting with the results for the control variables, funding amounts increase with economic activity (proxied by nighttime light intensity), at least at the 5% level of significance. Therefore, while it is true that more Chinese aid is allocated to poorer countries (Dreher and Fuchs 2015), we find that *poorer regions within countries* receive less support (i.e., regions with less nighttime light intensity, after controlling for regional population size). Geographically larger regions and regions containing the country's capital also receive more funding, both at the 1% level of significance. We also find that ADM2 regions with larger populations and ports receive significantly more funding, both at the 10% level. Road density is not related to the receipt of Chinese funding. In addition, contrary to the conventional wisdom, the availability of natural resources does not seem to be a robust correlate of Chinese funding at the subnational level. While ADM2 regions that lack oil and gas receive more Chinese support, ADM1 regions with mines do receive significantly more Chinese funding (both at the 10% level). However, this latter effect disappears when we restrict the sample to ODA-like flows, that is aid in the stricter sense (see column 3).[44]

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[44]This result is in line with the findings of Dreher et al. (2015), who report that China's commercial motives matter more for less concessional flows than for ODA-like flows.

In short, our results imply that subnational need is not a major determinant of how Chinese funding (of either the concessional or non-concessional variety) is allocated within African countries.

Table 2 around here

Turning to our primary variable of interest, the results in column 1 show that larger amounts of Chinese funding go to the birth regions of a country's political leader, at the 5% level of significance. The coefficient implies an increase in concessional and non-concessional financial flows of almost 100% to ADM1 regions containing the political leader's birthplace. We also find that the average ADM2 region nested within the ADM1 region where the current political leader was born receives more funding (column 2). ADM2 regions located within the ADM1 regions of current political leaders on average see a 10% increase in funding.

Columns 3 and 4 replicate the analysis, focusing on a stricter definition of Chinese aid—ODA-like flows rather than all official finance. The results for most of our explanatory variables are qualitatively similar to those in columns 1 and 2. However, it is noteworthy that at the ADM2 level, the density of the road network does have a statistically significant and positive effect when analyzing ODA-like flows (column 4). The results for our main variable of interest are weaker than for total official financing flows. At the ADM1 and ADM2 levels, the coefficients of $Birthregion_{ict}$, while still positive, are no longer statistically significant at conventional levels.

Next, we measure Chinese support with a binary project commitment indicator in columns 5 and 6. The coefficient of $Birthregion_{ict}$ is positive and statistically significant at the 10% level for ADM1 regions, implying that the likelihood of a birth region to receive Chinese aid is 3.2% greater at the ADM1 level. This shows that our main finding cannot be driven by individual, large-scale projects ("megaprojects"). However, we do not find a significant effect at the ADM2 level (column 8).[45] In summary, the weight of the evidence across these six model specifications suggests that *African* leaders' political interests shape the subnational allocation of Chinese funding.[46]

In Table 3, we report our regressions of Equation 2, that is we replace our time-invariant control variables with region fixed effects. As controlling for both country-year and region

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[45]With respect to the control variables, results are very similar to the ones reported in columns 1 and 2.

[46]By contrast, Dreher et al. (2015) show that *Chinese* political interests predominate in the cross-national allocation of Chinese aid. More specifically, they demonstrate that political variables are more important for Chinese ODA-like flows than for Chinese OOF-like flows at the country level.

fixed effects absorbs a large share of the variation in our variable of interest, it represents the more conservative specification. Controlling for the set of fixed effects makes the existence of a spurious relationship between birthplace and aid flows unlikely. It is therefore remarkable that the results for leaders' birth regions tend to become even stronger with the inclusion of region fixed effects—particularly, for total official financing flows at the ADM1 level with a coefficient statistically significant at the 1% level. The coefficient estimate in column 1 suggests that total official financing flows increase by approximately 195% when ADM1 regions become the political leader's birth region.[47] ODA-like flows increase by slightly more than 75% (column 3). The average ADM2 region receives roughly 10% more funding from China when one ADM2 region in the same ADM1 region is the leader's birth region. At the 10% level of significance, the same relationship holds for ODA-like flows, with an increase of almost 6% (column 4). The probability that a leader's ADM1 birth region receives a Chinese (ODA or OOF) project in a given year is 3.6 percentage points higher than for a non-birth region, which is sizable given the sample mean of 9% (column 5). While also being positive, the corresponding coefficient is, however, not significant at conventional levels for ADM2 regions (column 6).[48]

Table 3 around here

In a next step, we include the binary indicators $Prebirth_{ict}$ and $Postbirth_{ict}$ to our specifications with country-year and region fixed effects. $Prebirth_{ict}$ is equal to one in the last year before a region becomes the birth region of the (new) political leader, while $Postbirth_{ict}$ is equal to one in the first year in which a region is no longer the birth region of the (old) political leader. A statistically significant coefficient on $Prebirth_{ict}$ would imply that the political leaders' birth regions received more Chinese funding before political leaders assumed power, which would cast doubt on our interpretation that these regions receive more Chinese funding precisely because political leaders favor them. By

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[47]We investigated the potential heterogeneity of these effects. There is no evidence that the effect of birth regions differs systematically with the tenure of the political leader, the quality of democracy and political institutions, perceived corruption, the country's natural resource endowment, or voting patterns in the United Nations General Assembly. We also replaced initial nighttime light with the (logged) level of nighttime light in the previous year and its interaction with $Birthregion_{ict}$ to test whether our finding might reflect a catch-up effect of these regions (due to greater development of another region that has been $Birthregion_{ict}$). We find the effect of $Birthregion_{ict}$ to be stronger rather than weaker in richer regions, however. See Table C.2 of Appendix C for details.

[48]We also tested whether birth regions receive more aid at the narrow ADM2 level—rather than all ADM2 regions nested in the ADM1 region the leader was born. Without region fixed effects, we find this to be the case. However, once we include region fixed effects, birth regions no longer significantly determine aid. We present these results in Table C.4 of Appendix C.

contrast, a statistically significant coefficient on $Postbirth_{ict}$ would not invalidate a causal interpretation. It might well be that part of the funding pledged for a birth region is formally committed with some delay.

As can be seen in Table 4, $Postbirth_{ict}$ is marginally significant in column 1 only, suggesting that regions that were a birth region in the previous year but are no longer a birth region may still get more total funding than they get in other years.[49] More importantly, $Prebirth_{ict}$ is not statistically significant in any of the specifications (and is even negative in two cases). This finding provides remarkably strong support for our interpretation that there is a causal effect of being the political leader's birth region on unlocking more Chinese funding.

<div align="center">Table 4 around here</div>

The birth region effect is not restricted to single sectors but represents a broader pattern. Chinese projects in birth regions cover virtually all sectors. Applying OECD-DAC sector definitions, the lead sectors are Transport and Storage (39 projects), Government and Civil Society (31), Energy Generation and Supply (30), Education (29), and Health (20). However, we do find the birth region effect to be more substantial for projects in sectors that correspond to the OECD's "Social Infrastructure & Services" category than for projects in the "Production Sectors" category. The effect is non-existent for projects in sectors that fall within the OECD's "Economic Infrastructure & Services" category (see Table C.1 in Appendix C for details). "Social Infrastructure & Services" includes the education and health sectors, which are sectors in which "white elephant" projects are particularly likely.

To further explore the importance of favoritism in the allocation of Chinese aid, we georeferenced the birth regions of the (first) spouses of the political leaders in our sample (where sufficient information was available) and added the resulting binary indicator of the spouses' birth regions to our regression. We obtain similar results for spouses as for the leaders themselves (see Table C.3 of Appendix C). This finding can be interpreted as additional support for the favoritism argument.

We next turn to the allocation of World Bank funding to test whether financial support from a donor with strict project appraisal policies and procedures can be politically manipulated to the same extent as aid from China, with its strong emphasis on non-interference.

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[49]We also explored the relevance of post-birth regions by adding a further lag $Postbirth_{ict+1}$ to our regressions. Neither $Postbirth_{ict}$ nor $Postbirth_{ict+1}$ register significant effects in any regression including both terms, while our main results are hardly affected by their inclusion (see Table C.5 in Appendix C).

We again start by analyzing total official flows in columns 1 and 2, that is project commitments made through either the IBRD or IDA windows of the World Bank. We then focus on IDA flows exclusively in columns 3 and 4, which contain only grants and highly concessional loans to mirror our ODA-like regressions for China in previous tables. Finally, in columns 5 and 6, we again focus on the binary project commitment indicator rather than financial amounts. Table 5 presents results that exclude region fixed effects. The major cross-sectional determinants of subnational aid allocation are by and large similar for the World Bank as for China. The main differences are that there is no robust evidence that the World Bank provides more funds to capital regions at the ADM1 level, and that it allocates more aid to populous regions, according to all six specifications. The World Bank also allocates more to regions with a port. The results with and without region fixed effects in Tables 5 and 6 consistently provide no evidence that (ADM1 or ADM2) regions get more World Bank funding in years when they are the current political leader's birth region than in other years. Hence, it seems that African leaders cannot use funding from the World Bank for patronage politics in the same way they can with Chinese funding.[50]

<div align="center">Table 5 around here</div>

<div align="center">Table 6 around here</div>

We expect that regional favoritism related to the allocation of Chinese funding is not limited to the geographic location of the birthplaces of political leaders. Political leaders might also want people from their own ethnic group to benefit disproportionately from development projects. If this is true, it implies that one should examine a wider set of locations with inhabitants that share the same ethnicity of the current political leader. To identify the possibility of ethnic favoritism in the allocation of Chinese funding, we change the unit of observation from subnational administrative units to ethnic regions (GREG regions) within a country.

We begin this GREG-region-level analysis by estimating a variant of Equation 1 (which does not control for region fixed effects) where we replace $Birthregion_{ict}$ by

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[50]These results remain unchanged if we further add $Prebirth_{ict}$ and $Postbirth_{ict}$ to the fixed-effects regressions reported in Table 6. One possible explanation for why we find a birth region effect for funding from China but not from the World Bank might be that World Bank funding is more fungible. To the extent that World Bank funding is fully fungible, it could end up being spent in the birth region of the leader independent from where it had been first allocated to. However, it is unlikely that external funding is fully fungible (van de Sijpe 2013). For example, van de Walle and Mu (2007) investigate fungibility of World Bank funds spent on a road rehabilitation project in Vietnam and find evidence of a "flypaper effect" rather than fungibility.

Ethnicregion$_{ict}$. The results in Table 7 suggest that regions populated by individuals with the same ethnicity as the current political leader are more likely to receive support from China (columns 1-3). However, we do not find such a relationship for grants and loans from the World Bank (columns 4-6). The coefficients of the control variables follow a similar pattern as the results based on ADM2 regions. Richer ethnic regions (again measured by the level of nighttime light intensity in 2000), geographically larger ethnic regions, and ethnic regions that include the country's capital receive more Chinese and World Bank funding compared to other regions.[51] Interestingly, the coefficient of mines is statistically significant at conventional levels for all aid variables in the China regressions, including the regression that focuses on ODA-like projects only.

Table 7 around here

Table 8 replicates the regressions for the regions populated by the political leaders' ethnic group, including region fixed effects. Using this more conservative specification, we find no evidence that the political leaders' ethnic regions receive more funding from either China or the World Bank.[52] We offer four explanations for these insignificant results that stand in contrast to our findings for leaders' birth regions. First, the larger size of the GREG regions compared to administrative regions reduces variation over time, making it more difficult to identify the effect with the inclusion of region fixed effects. Second, the substantially lower number of development projects that we are able to assign to ethnic regions compared to administrative regions increases noise, again making the identification of significant effects more difficult. Third, the number of changes in the ethnic groups of political leaders is somewhat smaller than the number of changes in leader birth regions.[53] Fourth and finally, political leaders might not steer Chinese (or World Bank) funding to their ethnic groups. This would be in line with the survey evidence in Ahlerup and Isaksson (2015: 144), who conclude that "ethnic and regional [favoritism] are not the same, but rather have independent effects that exist in parallel."

Table 8 around here

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[51]In contrast to China, the World Bank seems to systematically favor ethnic regions with larger populations and ports.

[52]These results remain unchanged if we further add *Preethnic$_{ict}$* and *Postethnic$_{ict}$* to the fixed effects regressions reported in Table 8, defined in analogy to the *Prebirth$_{ict}$* and *Postbirth$_{ict}$* indicators above.

[53]We observe 29 changes in our sample, compared to 39 changes at the ADM1 level.

5 Does Chinese aid affect development outcomes?

The main contribution of this study is the analysis of political favoritism in the allocation of Chinese aid.[54] However, we also examine the consequences of such biases by evaluating whether and to what extent Chinese funding has a detectable impact on local development outcomes. Even if Chinese funding that is allocated according to leaders' personal or domestic political interests has the same effect as Chinese funding allocated according to other criteria, any significant effect of these financial flows on subnational development outcomes—negative or positive—would imply that the political favoritism we detect in our allocation regressions has measurable development consequences. If the bias in the subnational distribution of Chinese-funded projects undermines development in politically privileged regions by increasing opportunities for rent-seeking and predation or otherwise ensuring that project benefits do not accrue to local communities (Maystadt et al. 2014; Kelly et al. 2016; Isaksson and Kotsadam 2016; Koos and Pierskalla forthcoming), then we can conclude that it is consequential from a development standpoint. Conversely, if Chinese funding accelerates subnational development in spite of the targeting bias that we have documented, we can also conclude that political favoritism is consequential.

With the data in our sample, identifying a causal effect of Chinese aid on development is challenging. Compared to most cross-country aid effectiveness studies, our dataset covers a relatively short period of time. The limited temporal variation in our sample does not allow for the use of four- or five-year-averages to investigate the effects of Chinese funding over the long-run.[55] Our estimation method—described below—might therefore prevent us from identifying significant effects even if such effects exist. Also, given the fragility of aid effectiveness results at the cross-country level (Doucouliagos and Paldam 2009; Roodman 2015), it might be overly ambitious to detect significant treatment effects for Chinese financial flows alone. In comparison to the joint contributions of all Western donors, which is typically the focus of such analyses, Chinese financial flows are small. On the other hand, it might be easier to detect treatment effects if Chinese development projects primarily affect local outcomes but fail to measurably increase overall economic growth and development at the country level (Dreher and Lohmann 2015).

Given that most countries in Africa lack (reliable) subnational GDP data, we measure (logged) per-capita luminosity output—$Lightpc_{ict}$—with the same source that is used in

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[54]Here we are using the term 'aid' in the broad rather than the narrow (ODA) sense of the term.

[55]Given our short sample of 12 years, we report regressions using three-year averages as a robustness test below.

the allocation equation above.[56] To estimate the effect of Chinese funding on (logged) per-capita nighttime luminosity, we estimate the following equation both at the ADM1 and ADM2 level:[57]

$$Lightpc_{ict} = \alpha_{ct} + \delta_{ic} + \varphi Aidpc_{ict-\tau} + \nu_{ict}, \tag{3}$$

where α_{ct} again represents country-year fixed effects and δ_{ic} region fixed effects. Depending on the unit of analysis, i denotes either ADM1 or ADM2 regions. We use the lag of $Aidpc$ (where $\tau \in \{1, 2, 3\}$) to account for delays between the time of commitments and the construction of light-emitting assets.[58] The dependent variable in our sample thus ranges between 2001 and 2013 in the most extensive sample.

Despite the use of lagged values and the inclusion of region and country-year fixed effects, an obvious concern is that Chinese financial commitments and subnational luminosity are simultaneously determined by other time-variant factors that are unobserved. Estimating Equation 3 with OLS would therefore result in inconsistent and biased estimates of φ.

To address this concern, we apply a two-stage least squares (2SLS) approach inspired by Nunn and Qian (2014), who estimated the effect of US food aid on conflict in recipient countries by exploiting exogenous time variation in US wheat production and cross-sectional variation in the recipient countries' likelihood to receive US food aid. In particular, we estimate the following first-stage regression:

$$Aidpc_{ict-\tau} = \alpha_{ct-\tau} + \delta_{ic} + \lambda(\bar{A}_{ic} \times Steel_{t-\tau}) + u_{ict-\tau}. \tag{4}$$

$\bar{A}_{ic}$ is the fraction of years between 2001 and 2011 that region i received any Chinese

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[56]NOAA's nighttime light data are frequently used as a proxy for subnational development (e.g., Chen and Nordhaus 2011; Henderson et al. 2012; Michalopoulos and Papaioannou 2013, 2014; Hodler and Raschky 2014a, 2014b, Dreher and Lohmann 2015; Ahlerup et al. forthcoming). We use a measure of luminosity per capita, rather than luminosity per square kilometer (or "light density"), because luminosity per capita is arguably a better predictor of GDP per capita (Cogneau and Dupraz 2014). In keeping with the aid effectiveness literature at large, we use (logged) Chinese funding per capita rather than the (logged) absolute amount of Chinese funding. This is because the overall effects of such funding should differ depending on whether it is given to a more or less populous region.

[57]We do not replicate the analysis for GREG regions because we did not find the effect of leaders' ethnic regions to be robust to the inclusion of region fixed effects (that we need to control for in our effectiveness regressions).

[58]There is sometimes a substantial lag between the funding committed by Western donors and when such funding is disbursed and between the time when funding is disbursed and when such funding produces results (see Dreher et al. 2016). According to the data from Bartke (1989) used in Dreher and Fuchs (2015), the average Chinese aid project starts about one year after a financial agreement has been signed.

funding, that is $\bar{A}_{ic} = [\frac{1}{12} \sum_{t=2000}^{2011} A_{ict}] \cdot 100$, where A_{ict} is a binary indicator variable that switches to one if subnational region i in country c received any Chinese funding in year t.[59]

Apart from using subnational data (and focusing on financial support from China rather than US food aid), the main difference between our approach and that of Nunn and Qian (2014) is that our exogenous source of time variation in Chinese funding is the (logged) annual amount of Chinese steel production (in thousand tons), labeled $Steel_{t-\tau}$ (data from the World Steel Association 2010, 2014). China is the world's leading producer and exporter of steel (Stratfor 2016). The Chinese government considers steel to be a commodity of strategic importance and has facilitated the rapid expansion of its production by, among other things, heavily subsidizing Chinese state-owned enterprises (SOEs). It has a track record of generating an oversupply of steel (Zheng et al. 2009) and looking for overseas markets where it can "dump" its steel products at artificially low prices (Spegele and Miller 2016; Stratfor 2016).[60] Copper (2016: 166) notes that "[i]n 2005, a high official in China spoke of serious overproduction in 11 sectors of the Chinese economy, including cement, steel, textiles, and autos" and "[f]oreign aid and external investing [...] were the means used to increase exports of overproduced goods."[61] For these reasons and because the majority of Chinese development projects in Africa require some form of construction activity, Chinese official financing commitments to Africa should increase with the production of steel in a given year.

This instrument has prima facie credibility because China's global development finance program is guided by a "going global" strategy explicitly designed to promote national exports and stimulate business for Chinese firms overseas (Davies et al. 2008; Chen and Orr 2009; Giovannetti and Sanfilippo 2009).[62] As such, most Chinese grants and loans are directly tied to the acquisition of Chinese goods, including steel.[63]

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[59]To test robustness, we proxy the regional probability of receiving Chinese funding with historical data on development projects from China during the Cold War era. Specifically, we rely on data on completed development projects, as collected by Bartke (1989). We georeferenced the locations of these projects and proxy a region's probability to receive aid in the 2000–2011 period with the share of years in which a region received Chinese funding in the 1956–1987 period. While our main conclusions hold, the first-stage F statistics are lower. Table E.1 shows these results.

[60]Economic indicators such as steel production also serve as indicators of leader performance at the local level, creating incentives to build excess capacity. In this context, Li and Zhou (2005) speak of an "'obsession' with economic ranking" among local leaders.

[61]In this regard, Copper (2016: 2000) argues that China is taking a page out of the U.S. Government's playbook: "in the early post-World War II period when [the U.S.] had too much money and produced too many goods [it] gave extensive foreign aid and made huge foreign investment. China is doing this today."

[62]This strategy was approved in 2000, the year in which our period of study begins.

[63]Indeed, China EXIM Bank specifies that, with respect to the concessional loans that it authorizes,

One might be concerned about the potential direct effects of having received funding from China on subnational economic development. However, our specifications control for the effect of the probability of receiving Chinese funding through the inclusion of region fixed effects. Given that we control for the effect of the potentially endogenous variable, the interaction of the endogenous variable with an exogenous one can be interpreted as exogenous (Bun and Harrison 2014; Nunn and Qian 2014; Nizalova and Murtazashvili 2016). The intuition is that of a difference-in-difference approach, where we investigate a differential effect of changes in Chinese steel production on development outcomes between subnational regions with a high probability of receiving Chinese funding and a low probability of receiving Chinese funding. The identifying assumption is that development outcomes in subnational regions with differing probabilities of receiving Chinese funding will not be affected differently by changes in Chinese steel production, other than via the impact of Chinese funding, controlled for region fixed effects and country-year fixed effects in the model.

A natural concern about the validity of the instrumental variable is that Chinese steel production may be correlated with other factors that have a differential effect on the development impact of Chinese funding in subnational regions with different propensities to receive such funding, $\bar{A}_{ic}$. For example, increased steel production in China could be correlated with increased trade and FDI activity between China and the recipient country c. The country-year fixed effects α_{ct} would capture the overall effect of changes in trade and FDI activity between China and recipient country c. However, these changes could disproportionately affect the impact of Chinese funding on subnational development. To address this concern, we include interactions between $\bar{A}_{ic}$ and the total trade flows between China and country c in year t and the total (net) FDI flows from China to country c in year t.[64] Note, however, that even when the effectiveness of Chinese funding depends on omitted variables that change due to a subnational region being a leader's birth region, we can still test whether such birth regions causally modify the effectiveness of Chinese funding (though a differential effect of funding would then be caused by changes in external circumstances rather than by changes in the quality of the funding).

"Chinese enterprises should be selected as contractors/exporters and equipment, materials, technology or services needed for the project should be procured from China ahead of other countries—no less than 50% of the procurement shall come from China" (Davies et al. 2008: 57). More broadly, many Chinese grants and loans are actually trade finance instruments, such as export seller's credits that help Chinese firms do business in overseas markets and export buyer's credits that help firms from importing countries to buy goods and services from Chinese firms (Dreher et al. 2015).

[64]We do not log FDI given that these net flows can assume negative values. We also do not log trade, as doing so reduces the power of our instrument (but does not change any of the main conclusions).

Table 9 presents our Chinese "aid" effectiveness results for ADM1 regions. Panel A presents correlations between Chinese official financing and per-capita nighttime light, estimated with OLS. Each column presents results for different lags of the Chinese "aid" variable, whereby the first row denotes the lag used in the regression. The estimated coefficients are small in magnitude and all three obtain a positive sign. Only the third lag of Chinese funding appears to be systematically correlated with luminosity. We show the corresponding first-stage estimates in Panel B. The estimates show a strong and positive relationship between our instrumental variable and Chinese funding.[65]

Panel C introduces the results from the instrumental-variables estimates. The coefficients of the Chinese funding variables are positive but only statistically significant (at the 5% level) for the third lag. Comparing the coefficients from the different lags shows that the impact of Chinese financial commitments increases over time. This reveals that Chinese funding does not have an immediate impact on local economic development at the ADM1 level in the initial first two years after the funding has been committed, but the effect becomes statistically significant in the third year.

Our preferred specifications include interactions between the propensity that a subnational region receives Chinese funding and total trade and FDI activity between China and country c (panel D). While the overall pattern of the effect of Chinese funding remains similar to the results reported in panel C, we now identify a weakly significant effect on nighttime light emissions already in the second year after the financial commitment. The first-stage F-statistic for the excluded instrument is between 15 and 22, suggesting that it is very unlikely that our estimates suffer from weak instrument bias.

With respect to the magnitude of the estimated development impact of Chinese official financing, the coefficient in panel C (which relies on a three-year lag for aid to register impact) suggests that a 10% increase in Chinese funding leads to a 0.8% increase in per-capita light output within an ADM1 region. This corresponds to an increase in subnational GDP of around 0.24% if one applies the estimated elasticity between nightime light and GDP of around 0.3 reported in Henderson et al. (2012) and Hodler and Raschky (2014a). This finding stands in contrast to the insignificant growth impacts of World Bank funding, which are documented by Dreher and Lohmann (2015).[66]

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[65]We show the reduced form estimates in Table E.2 in the Appendix.

[66]Dreher and Lohman (2015) identify exogenous changes in regional aid relying on country-level variation resulting from countries passing the IDA's income threshold for receiving concessional aid and time-series

Table 10 around here

We now turn to Table 10, which contains the results of the "aid" effectiveness estimates using observations at the ADM2 level. Again, panel A presents OLS estimates, panel B the first-stage 2SLS estimates, and panels C and D the second-stage 2SLS estimates with and without additional control variables, respectively. Compared to the results at the ADM1 level, Chinese funding appears to have a more immediate, positive effect on per-capita nighttime light output at the ADM2 level. Again, the magnitude of the effect is increasing over time, consistently in the OLS estimates (panel A) and the 2SLS estimates (panels C and D). Using the estimated coefficients from the 2SLS specifications including the additional control variables (panel D) suggests that a 10% increase in local Chinese financial commitments increases per-capita nighttime light emissions by 0.6% in the following year, 0.8% after two years, and 1.1% in the third year after the aid has been committed. Assuming again an elasticity between nighttime light and regional GDP of 0.3, this estimate translates into a 0.2% to 0.3% increase in regional GDP. In each of these years, a 10% increase in Chinese funding would therefore imply an increase in regional GDP that approximately matches the average total value of the Chinese funding as a percentage of average regional GDP (which is 0.29% in our estimation sample). The development impacts that we observe thus clearly exceed the value of the funding itself one year after the funding has been committed and in each of the two years thereafter. The first-stage F-statistic for the excluded instrument is consistently above 20.[67]

Overall, our results show that Chinese official finance has a small, immediate, and positive effect on nighttime light intensity in lower-order subnational localities (ADM2 level). A similar effect occurs, with some delay, in higher-order subnational localities (ADM1 level). This coefficient increases over time (both in the ADM1 and ADM2 samples) and exceeds the amount of funding in magnitude, indicating that Chinese official finance has an effect on the local economy that goes beyond the initial investment (e.g., infrastructure installation) phase. Taken together, these results provide some evidence that China is making a positive and non-trivial impact on the local economies of African countries in the short run.[68]

variation in the region's probability to experience the resulting reductions in World Bank aid in analogy to our approach here. When we replicate their approach for the African sample in this paper, the number of countries passing the income threshold is insufficiently low for the instrument to be powerful. When we estimate the regressions with OLS, we find no significant correlation between World Bank aid and per-capita light in our sample, in analogy to the results in Dreher and Lohmann (2015).

[67]We show the reduced form estimates in Table E.2 in the Appendix.

[68]We also attempted to identify differential effects of Chinese funding between birth regions and non-

Our main conclusions also hold when we partition the 2000–2011 period into three-year periods and analyze the effect of lagged Chinese funding on current nighttime light (see Appendix Table E.5). However, due to the relatively short time span that our dataset covers, we are unable to make any conclusive statements about the effectiveness of Chinese aid beyond these short-run effects. Therefore, the evidence should be seen as tentative. In any case, our results show that the political favoritism we detect in the allocation of Chinese aid is likely consequential.

6   Conclusions

China prides itself on providing foreign aid in a demand-driven process to meet the needs of recipients. Many scholars also give Beijing credit for providing their African government counterparts with more "ownership" and "policy space" (e.g., Bräutigam 2011b; Kragelund 2011; Reisen and Stijns 2011). However, while good intentions might guide this policy and advance the norm of country ownership formalized in the Paris Declaration on Aid Effectiveness, it is unclear who Beijing expects to ultimately benefit from such a policy. "Recipient need" could refer to the needs of the general population or to governing elites and their clients, but the interests of these groups do not necessarily align.

Our results based on a new georeferenced dataset of Chinese development finance across African localities highlight the potential development risks of this "on-demand" approach: controlling for indicators of recipient needs and various fixed effects, more Chinese development projects are located in the birth regions of African leaders, while similar results are absent in terms of the allocation of World Bank aid. When provided with the discretion to do so, African leaders seem to pay favorites by allocating substantial additional resources to their home constituencies to the detriment of citizens who face greater economic needs. We found very similar but less robust evidence for preferential treatment of regions populated by individuals who belong to the ethnic group of the political leader.

A concern that follows from our main finding is the possibility that the subnational distribution of Chinese funding might diminish its ultimate effectiveness. Previous research suggests the bulk of the variation in project success to be at the project rather than the

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birth regions. We did not find any significant differences, as can be seen in Appendix Tables E.3 and E.4. Our result is in line with Dreher et al. (2013), who investigate whether World Bank projects committed to countries in times of geo-strategic importance are of lower quality compared to projects allocated at other times. This is not the case, on average. Note that it is therefore unlikely that leaders channel aid to their birth regions because they have better information about how the aid could be used effectively.

country level (Denizer et al. 2013; Bulman et al. forthcoming). There is also a growing body of evidence that the allocation of development expenditure to a narrow set of political constituencies is unlikely to improve the provision of public goods or facilitate significant improvements in development outcomes (e.g., Cohen 1995; Wright 2010; Dionne et al. 2013). As Briggs (2014: 202-203) puts it, "a lot of successfully built roads may not help national growth if they are built in areas that are politically—but not economically— important. The individual projects may have succeeded, and some key constituencies may enjoy these roads, but this alone does not ensure that the roads will improve the national economy."

However, our regressions provide tentative evidence that Chinese "aid" does in fact improve local development outcomes—inside and outside of the birth regions of political leaders. This finding contrasts strongly with the results in Dreher and Lohmann (2015) regarding the subnational development impacts of ODA and OOF from the World Bank. They find no robust, causal evidence that funding from the World Bank increases night-time light growth. We find evidence that Chinese official financing improves subnational development outcomes, as measured by per-capita nighttime light emissions.

When taken together, our findings in this study call attention to the possibility that Chinese funding will have longer-term, distributional effects on the ground that are not yet fully understood or appreciated. If Chinese-funded projects improve subnational development outcomes but are also concentrated in the birth regions of political leaders and in the wealthier parts of countries, China may be inadvertently cementing or widening spatial inequalities in its counterpart countries. It is beyond the scope of this study to examine the downstream consequences of spatial inequalities that are reinforced by China. However, the fact that Chinese development projects target politically privileged regions necessarily means that politically marginalized regions benefit less from such projects. Future research should therefore assess whether and to what extent Chinese development finance *indirectly* increases the probability of social unrest, state repression, or violent conflict.

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Figures and Tables

Figure 1: Value of Chinese aid projects per subnational unit in Africa (total value in million 2009 US$, 2000–11, ADM1)
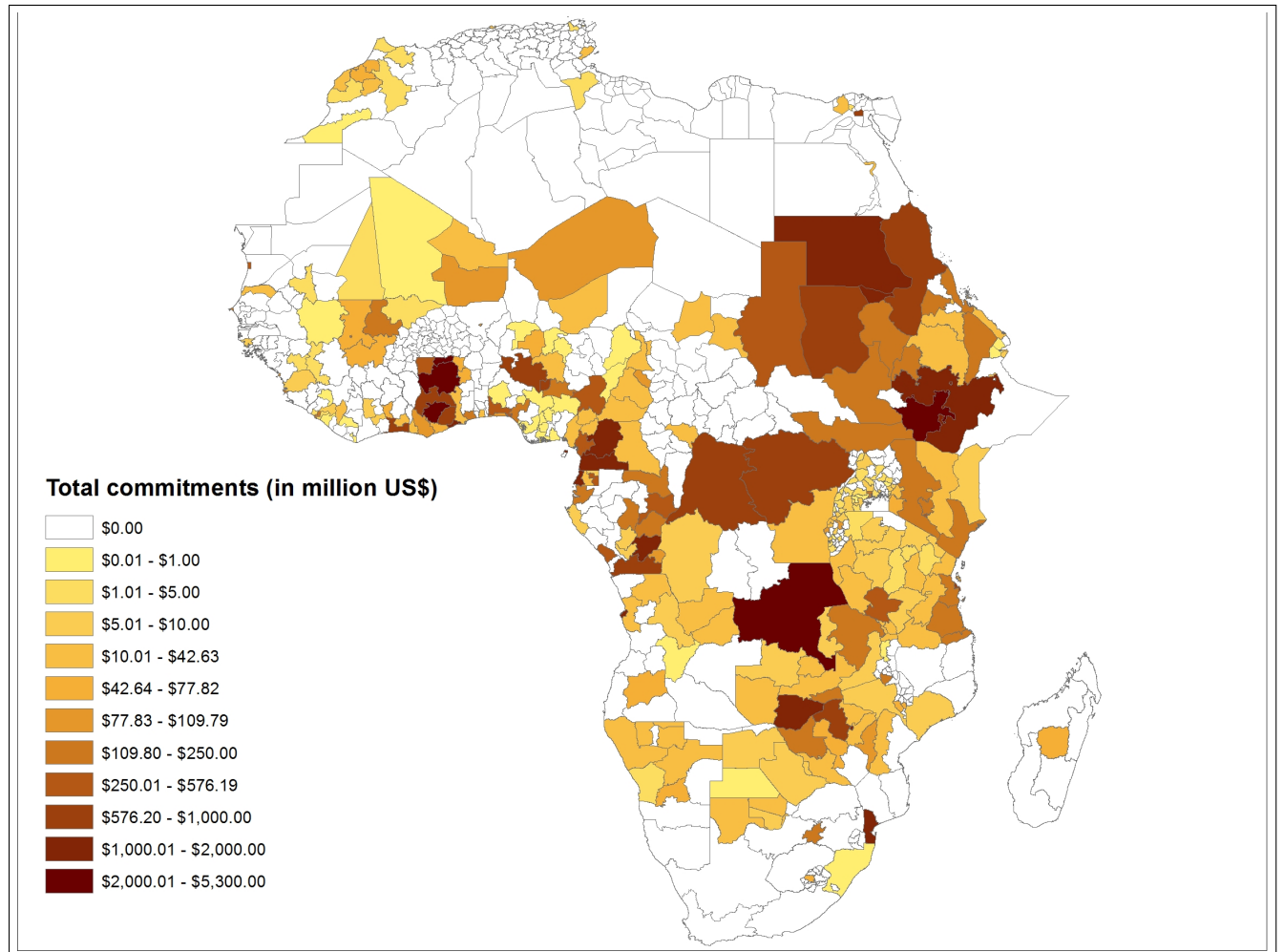
Figure 2: Birth regions of effective political leaders in Africa (2000–11, ADM1)

Leaders' birthregion

No birthregion

Birthregion
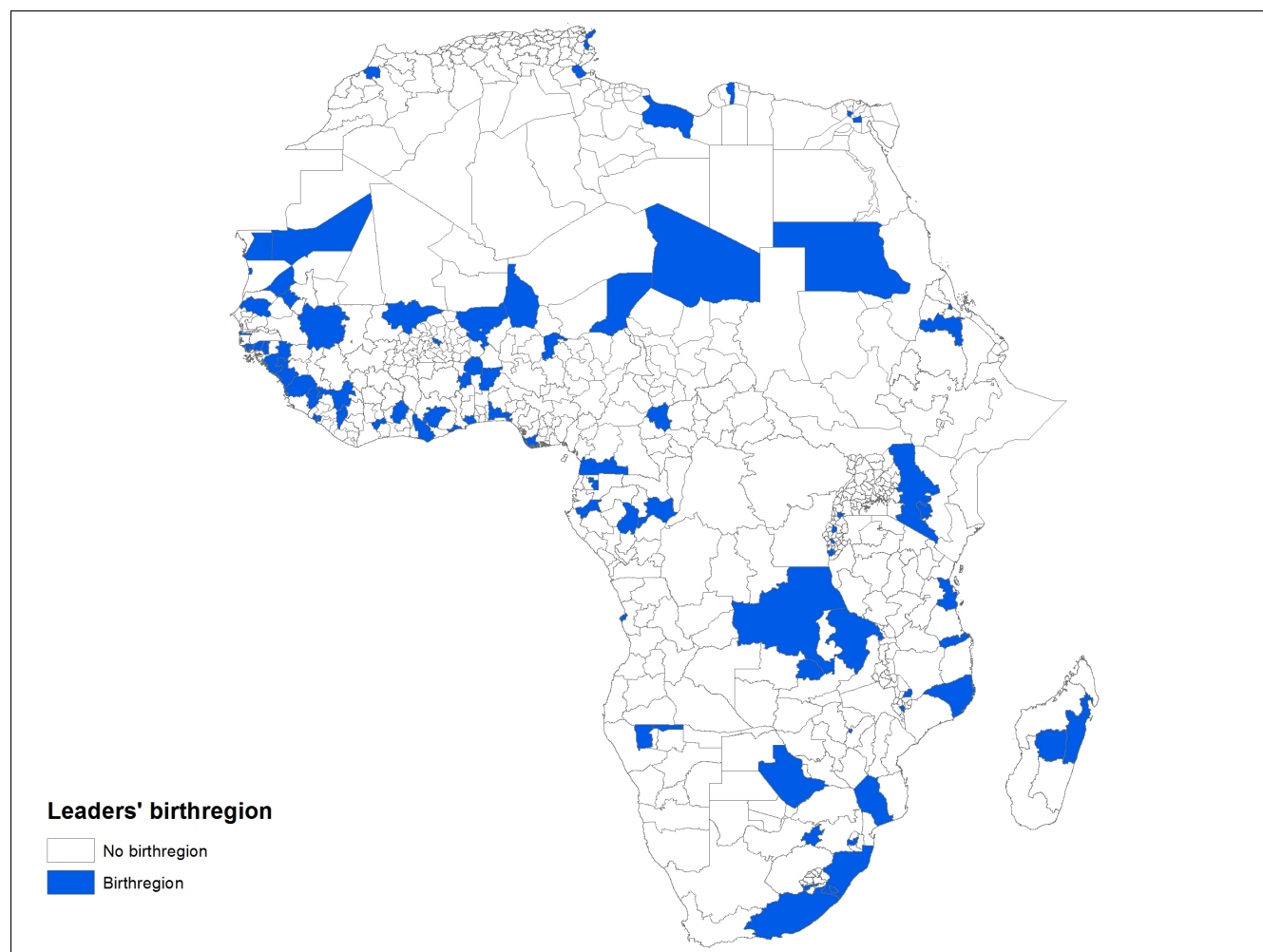
Table 1: Summary statistics, 2000–11, ADM1 regions

Variable	Obs.	Mean	Std. Dev.	Min	Max
Chinese total flows (in levels)	8,327	6.5m	86.8m	0	5.2b
Chinese ODA-like flows (in levels)	8,375	1.5m	29.1m	0	1.5b
Chinese project dummy	8,508	0.090	0.286	0	1
World Bank total flows (in levels)	8,508	5.86m	31.31m	0	2.06b
World Bank IDA flows (in levels)	8,508	4.63m	16.39m	0	297m
World Bank project dummy	8,508	0.311	0.463	0	1
Birthregion	8,508	0.067	0.249	0	1
Light2000 (in levels)	8,508	1.964	5.989	0	48.20
Population2000 (in levels)	8,508	1.1m	1.7m	6,047	21.9m
Capitalregion	8,508	0.066	0.249	0	1
Mines (in levels)	8,508	3.577	12.58	0	139
Oilgas	8,508	0.173	0.379	0	1
Area (in levels)	8,508	41,107	81,045	41.56	0.6m
Ports	8,508	0.186	0.389	0	1
Roaddensity	8,508	0.092	0.146	0	1.874

Table 2: Birth regions and China's aid, OLS, country-year fixed effects, 2000–11

	(1)	(2)	(3)	(4)	(5)	(6)
Units of obs.	ADM1	ADM2	ADM1	ADM2	ADM1	ADM2
Dependent variables	Total flows (in logs)	Total flows (in logs)	ODA-like flows (in logs)	ODA-like flows (in logs)	Project dummy	Project dummy
Birthregion	0.688**	0.095*	0.283	0.019	0.032*	0.003
	(0.323)	(0.056)	(0.206)	(0.035)	(0.019)	(0.003)
Light2000	0.293**	0.061***	0.242**	0.039**	0.021***	0.005***
	(0.114)	(0.019)	(0.120)	(0.015)	(0.007)	(0.001)
Population2000	0.087	0.028*	0.014	0.009	0.009	0.002**
	(0.087)	(0.014)	(0.073)	(0.009)	(0.006)	(0.001)
Capitalregion	4.164***	4.677***	2.837***	3.264***	0.269***	0.327***
	(0.496)	(0.537)	(0.398)	(0.437)	(0.028)	(0.032)
Mines	0.117*	0.021	0.003	-0.000	0.008*	0.002
	(0.066)	(0.026)	(0.039)	(0.013)	(0.004)	(0.002)
Oilgas	0.070	-0.058*	0.077	-0.043	-0.000	-0.004*
	(0.132)	(0.035)	(0.122)	(0.026)	(0.008)	(0.002)
Area	0.234***	0.041***	0.183**	0.024***	0.018***	0.003***
	(0.085)	(0.013)	(0.077)	(0.009)	(0.006)	(0.001)
Ports	-0.068	0.160*	-0.155	0.039	-0.007	0.013**
	(0.187)	(0.086)	(0.146)	(0.059)	(0.012)	(0.006)
Roaddensity	1.145	0.358	1.181	0.324**	0.104	0.018
	(1.130)	(0.220)	(0.865)	(0.158)	(0.066)	(0.011)
Country-year FE	yes	yes	yes	yes	yes	yes
Region FE	no	no	no	no	no	no
R-squared	0.398	0.183	0.350	0.151	0.394	0.200
Observations	8,327	69,054	8,375	69,115	8,508	69,252
Number of regions	709	5,835	709	5,835	709	5,835

Notes: Standard errors (in parentheses) clustered at the leader level. *** (**, *): significant at the 1% (5%, 10%) level.

Table 3: Birth regions and China's aid, OLS, country-year and region fixed effects, 2000–11

	(1)	(2)	(3)	(4)	(5)	(6)
Units of obs.	ADM1	ADM2	ADM1	ADM2	ADM1	ADM2
Dependent variables	Total flows (in logs)	Total flows (in logs)	ODA-like flows (in logs)	ODA-like flows (in logs)	Project dummy	Project dummy
Birthregion	1.082***	0.105**	0.569*	0.055*	0.036*	0.002
	(0.369)	(0.043)	(0.301)	(0.030)	(0.022)	(0.003)
Country-year FE	yes	yes	yes	yes	yes	yes
Region FE	yes	yes	yes	yes	yes	yes
R-squared	0.296	0.098	0.277	0.068	0.284	0.105
Observations	8,327	69,817	8,375	69,880	8,508	70,020
Number of regions	709	5,835	709	5,835	709	5,835

Notes: Standard errors (in parentheses) clustered at the leader level. *** (**, *): significant at the 1% (5%, 10%) level.

Table 4: Birth regions with lead and lag and China's aid, OLS, country-year and region fixed effects, 2000–11

	(1)	(2)	(3)	(4)	(5)	(6)
Units of obs.	ADM1	ADM2	ADM1	ADM2	ADM1	ADM2
Dependent variables	Total flows (in logs)	Total flows (in logs)	ODA-like flows (in logs)	ODA-like flows (in logs)	Project dummy	Project dummy
Birthregion	1.309***	0.132***	0.593*	0.060*	0.045**	0.004
	(0.378)	(0.049)	(0.307)	(0.032)	(0.023)	(0.003)
Prebirth	0.467	0.018	-0.772	-0.071	0.040	0.001
	(0.893)	(0.087)	(0.562)	(0.057)	(0.058)	(0.007)
Postbirth	1.471*	0.191	0.836	0.088	0.040	0.015
	(0.816)	(0.120)	(0.731)	(0.073)	(0.050)	(0.012)
Country-year FE	yes	yes	yes	yes	yes	yes
Region FE	yes	yes	yes	yes	yes	yes
R-squared	0.297	0.098	0.278	0.069	0.284	0.105
Observations	8,327	69,817	8,375	69,880	8,508	70,020
Number of regions	709	5,835	709	5,835	709	5,835

Notes: Standard errors (in parentheses) clustered at the leader level. *** (**, *): significant at the 1% (5%, 10%) level.

Table 5: Birth regions and World Bank aid, OLS, country-year fixed effects, 2000–11

	(1)	(2)	(3)	(4)	(5)	(6)
Units of obs.	ADM1	ADM2	ADM1	ADM2	ADM1	ADM2
Dependent variables	Total flows (in logs)	Total flows (in logs)	IDA flows (in logs)	IDA flows (in logs)	Project dummy	Project dummy
Birthregion	0.090	0.136	0.119	0.163	-0.011	0.009
	(0.136)	(0.111)	(0.137)	(0.106)	(0.016)	(0.007)
Light2000	0.148***	0.226***	0.157***	0.223***	0.032***	0.014***
	(0.037)	(0.039)	(0.037)	(0.039)	(0.009)	(0.003)
Population2000	0.387***	0.171***	0.336**	0.155***	0.045***	0.011***
	(0.133)	(0.052)	(0.139)	(0.051)	(0.008)	(0.003)
Capitalregion	0.217	3.167***	0.136	3.035***	0.059***	0.184***
	(0.184)	(0.545)	(0.174)	(0.545)	(0.020)	(0.032)
Mines	0.129***	0.073	0.102**	0.047	0.008	0.004
	(0.048)	(0.071)	(0.051)	(0.065)	(0.005)	(0.004)
Oilgas	-0.128	-0.206*	-0.104	-0.183*	-0.000	-0.013*
	(0.121)	(0.109)	(0.118)	(0.110)	(0.013)	(0.007)
Area	0.223***	0.188***	0.240***	0.188***	0.023**	0.012***
	(0.059)	(0.040)	(0.058)	(0.039)	(0.010)	(0.003)
Ports	0.192*	0.509***	0.172	0.431**	-0.010	0.032***
	(0.112)	(0.168)	(0.114)	(0.176)	(0.012)	(0.011)
Roaddensity	0.252	0.307	0.345	0.314	0.048	0.018
	(0.468)	(0.222)	(0.459)	(0.227)	(0.056)	(0.013)
Country-year FE	yes	yes	yes	yes	yes	yes
Region FE	no	no	no	no	no	no
R-squared	0.519	0.332	0.540	0.345	0.585	0.348
Observations	8,508	69,252	8,508	69,252	8,508	69,252
Number of regions	709	5,835	709	5,835	709	5,835

Notes: Standard errors (in parentheses) clustered at the leader level. *** (**, *): significant at the 1% (5%, 10%) level.

Table 6: Birth regions and World Bank aid, OLS, country-year and region-fixed effects, 2000–11

	(1)	(2)	(3)	(4)	(5)	(6)
Units of obs.	ADM1	ADM2	ADM1	ADM2	ADM1	ADM2
Dependent variables	Total flows (in logs)	Total flows (in logs)	IDA flows (in logs)	IDA flows (in logs)	Project dummy	Project dummy
Birthregion	-0.126	0.192	-0.059	0.196	-0.026	0.014
	(0.160)	(0.129)	(0.156)	(0.129)	(0.025)	(0.009)
Country-year FE	yes	yes	yes	yes	yes	yes
Region FE	yes	yes	yes	yes	yes	yes
R-squared	0.408	0.242	0.421	0.251	0.465	0.263
Observations	8,508	70,020	8,508	70,020	8,508	70,020
Number of regions	709	5,835	709	5,835	709	5,835

Notes: Standard errors (in parentheses) clustered at the leader level.

Table 7: Ethnic regions and aid, OLS, country-year fixed effects, 2000–11

	(1)	(2)	(3)	(4)	(5)	(6)
Units of obs.	GREG	GREG	GREG	GREG	GREG	GREG
Donor	China	China	China	World Bank	World Bank	World Bank
Dependent variables	Total	ODA-like	Project	Total	IDA	Project
	flows	flows	dummy	flows	flows	dummy
	(in logs)	(in logs)		(in logs)	(in logs)	
Ethnicregion	1.020***	0.524**	0.065***	0.294	0.214	0.015
	(0.268)	(0.226)	(0.017)	(0.300)	(0.306)	(0.017)
Light2000	0.227***	0.119***	0.015***	0.449***	0.506***	0.027***
	(0.052)	(0.041)	(0.003)	(0.078)	(0.075)	(0.005)
Population2000	0.016	-0.022	0.003	0.281***	0.140	0.016***
	(0.057)	(0.039)	(0.003)	(0.088)	(0.088)	(0.005)
Capitalregion	4.682***	3.495***	0.306***	2.803***	2.447***	0.152***
	(0.540)	(0.459)	(0.031)	(0.444)	(0.439)	(0.026)
Mines	0.233**	0.188*	0.017**	-0.030	-0.066	-0.003
	(0.117)	(0.111)	(0.007)	(0.209)	(0.200)	(0.012)
Oilgas	-0.138	-0.256	-0.030	0.040	0.087	-0.002
	(0.300)	(0.224)	(0.021)	(0.426)	(0.435)	(0.025)
Area	0.139**	0.045	0.009**	0.406***	0.460***	0.025***
	(0.063)	(0.040)	(0.004)	(0.092)	(0.093)	(0.005)
Ports	0.201	0.023	0.026	0.701*	0.337	0.039*
	(0.305)	(0.242)	(0.019)	(0.386)	(0.385)	(0.022)
Roaddensity	0.986	0.299	0.096	1.315	2.521	0.091
	(1.021)	(0.603)	(0.066)	(1.538)	(1.565)	(0.093)
Country-year FE	yes	yes	yes	yes	yes	yes
Region FE	no	no	no	no	no	no
R-squared	0.345	0.327	0.369	0.431	0.419	0.429
Observations	6,578	6,606	6,684	6,684	6,684	6,684
Number of regions	557	557	557	557	557	557

Notes: Standard errors (in parentheses) clustered at the leader level. *** (**, *): significant at the 1% (5%, 10%) level.

Table 8: Ethnic regions and aid, OLS, country-year and region fixed effects, 2000–11

	(1)	(2)	(3)	(4)	(5)	(6)
Units of obs.	GREG	GREG	GREG	GREG	GREG	GREG
Donor	China	China	China	World Bank	World Bank	World Bank
Dependent variables	Total flows (in logs)	ODA-like flows (in logs)	Project dummy	Total flows (in logs)	IDA flows (in logs)	Project dummy
Ethnicregion	0.184	-0.064	0.032	0.212	0.299	0.016
	(0.387)	(0.273)	(0.025)	(0.381)	(0.365)	(0.022)
Country-year FE	yes	yes	yes	yes	yes	yes
Region FE	yes	yes	yes	yes	yes	yes
R-squared	0.193	0.199	0.194	0.325	0.323	0.331
Observations	6,612	6,640	6,718	6,718	6,718	6,718
Number of regions	562	562	562	562	562	562

Notes: Standard errors (in parentheses) clustered at the leader level.

Table 9: Aid effectiveness estimates ADM1

Time lag τ	1	2	3
	Panel A. OLS Estimates		
$Aidpc_{ict-\tau}$	0.0044	0.0022	0.0050**
	(0.0031)	(0.0018)	(0.0023)
Observations	9,217	8,508	7,799
	Panel B. First Stage Estimates		
$\bar{A}_{ic} \times Steel_{t-\tau}$	0.0149***	0.0162***	0.0144***
	(0.0036)	(0.0033)	(0.0034)
$\bar{A}_{ic} \times$ *Trade Flows with China*$_{ct-\tau}$	-0.0022***	-0.0016**	-0.0013
	(0.0006)	(0.0006)	(0.0008)
$\bar{A}_{ic} \times$ *FDI from China*$_{ct-\tau}$	-0.0053	-0.0079	-0.0161
	(0.0090)	(0.0061)	(0.0111)
Observations	8,671	8,004	7,337
	Panel C. 2SLS Estimates 1		
$Aidpc_{ict-\tau}$	0.0593	0.0641	0.0937**
	(0.0461)	(0.0433)	(0.0402)
Observations	9,217	8,508	7,799
F-stat	9.25	15.38	10.45
	Panel D. 2SLS Estimates 2		
$Aidpc_{ict-\tau}$	0.0547	0.0623*	0.0887**
	(0.0344)	(0.0348)	(0.0345)
$\bar{A}_{ic} \times$ *Trade Flows with China*$_{ct-\tau}$	0.0001	0.0001	0.0001
	(0.0001)	(0.0001)	(0.0001)
$\bar{A}_{ic} \times$ *FDI from China*$_{ct-\tau}$	-0.0009	-0.0001	0.0010
	(0.0009)	(0.0003)	(0.0007)
Observations	8,671	8,004	7,337
F-stat	15.78	22.02	16.34

Notes: Standard errors (in parentheses) clustered both at the region and year level. *** (**, *): significant at the 1% (5%, 10%) level. Dependent variable: $Lightpc_{ict}$. All specifications include country-year and region fixed effects.

Table 10: Aid effectiveness estimates ADM2

Time lag τ	1	2	3
	Panel A. OLS Estimates		
$Aidpc_{ict-\tau}$	0.0053**	0.0063**	0.0103***
	(0.0022)	(0.0030)	(0.0036)
Observations	75,023	69,252	63,481
	Panel B. First Stage Estimates		
$\bar{A}_{ic} \times Steel_{t-\tau}$	0.0198***	0.0195***	0.0196***
	(0.0038)	(0.0037)	(0.0041)
$\bar{A}_{ic} \times Trade\ Flows\ with\ China_{ct-\tau}$	-0.0009	-0.0007	0.0007
	(0.0008)	(0.0011)	(0.0010)
$\bar{A}_{ic} \times FDI\ from\ China_{ct-\tau}$	0.0056	0.0067	-0.0161
	(0.0102)	(0.0102)	(0.0131)
Observations	75,023	69,252	63,481
	Panel C. 2SLS Estimates 1		
$Aidpc_{ict-\tau}$	0.0883**	0.1000***	0.1270***
	(0.0345)	(0.0335)	(0.0273)
Observations	75,023	69,252	63,481
F-stat	38.12	54.48	33.06
	Panel D. 2SLS Estimates 2		
$Aidpc_{ict-\tau}$	0.0568*	0.0793**	0.107***
	(0.0333)	(0.0385)	(0.0308)
$\bar{A}_{ic} \times Trade\ Flows\ with\ China_{ct-\tau}$	0.0005*	0.0004	0.0003
	(0.0003)	(0.0003)	(0.0003)
$\bar{A}_{ic} \times FDI\ from\ China_{ct-\tau}$	-0.0006	-0.0007	0.0017
	(0.0010)	(0.0010)	(0.0014)
Observations	72,527	66,948	61,369
F-stat	24.95	25.36	20.57

Notes: Standard errors (in parentheses) clustered both at the region and year level. *** (**, *): significant at the 1% (5%, 10%) level. Dependent variable: $Lightpc_{ict}$. All specifications include country-year and region fixed effects.

Appendix A   Leader Data

Table A.1: African leaders in the sample

Country	Leader name	Entered office	Left office	ADM1 region	ADM2 region	Ethnicity
Angola	Jose Eduardo dos Santos	10.09.1979	ongoing	Luanda	Maianga	Kimbundu
Benin	Mathieu Kerekou	04.04.1996	06.04.2006	Atakora	Toffo	Somba
Benin	Thomas Yayi Boni	06.04.2006	ongoing	Borgou	Tchaourou	Yoruba
Botswana	Festus Mogae	31.03.1998	01.04.2008	Central	Serowe	Kalanga
Burkina Faso	Blaise Compaore	15.10.1987	ongoing	Oubritenga	Ziniare	Mossi
Burundi	Pierre Buyoya	25.07.1996	30.04.2003	Bururi	Rutovu	Tutsi
Burundi	Pierre Nkurunziza	26.08.2006	ongoing	Bujumbura Mairie	Roherero	Hutu
Burundi	Domitien Ndayizeye	30.04.2003	26.08.2006	Kayanza	Kayanza	Hutu
Côte d'Ivoire	Alassane Ouattara	11.04.2011	ongoing	N'zi-Comoé	Dimbokro	Dioula
Côte d'Ivoire	Laurent Gbagbo	26.10.2000	11.04.2011	Fromager	Gagnoa	Krou (Bete)
Cameroon	Paul Biya	06.11.1982	ongoing	Sud	Dja-et-Lobo	Beti
Cape Verde	Jose Maria Neves	01.02.2001	ongoing	Santa Catarina		Portugese
Cape Verde	Carlos Veiga	04.04.1991	29.07.2000	São Vicente		Portugese
Central African Republic	Ange-Felix Patasse	22.10.1993	15.03.2003	Ouham-Pendé	Paoua	Sara-Kaba
Chad	Idriss Deby	02.12.1990	ongoing	Bet	Ennedi Ouest	Zaghawa
Comoros	Ikililou Dhoinine	26.02.2011	ongoing	Ngwani		Swahili
Comoros	Azali Assoumani	27.05.2002	26.05.2006	Njazidja		Swahili
Comoros	Ahmed Abdallah Mohamed Sambi	27.05.2006	26.05.2011	Mwali		Hadrami
Comoros	Azali Assoumani	30.04.1999	21.01.2002	Njazidja		Swahili
Democratic Republic of Congo	Laurent-Desire Kabila	16.05.1997	16.01.2001	Katanga	Tanganika	Luba
Democratic Republic of Congo	Joseph Kabila	17.01.2001	ongoing	Katanga	Haut-Lomami	Luba
Egypt	Mohammed Hussein Tantawi	11.02.2011	ongoing	Al Qahirah		Nubian
Egypt	Hosni Mubarak	14.10.1981	11.02.2011	Al Minufiyah		Arab
Equatorial Guinea	Teodoro Obiang Nguema Mbasogo	03.08.1979	ongoing	Wele-Nzás		Fang
Eritrea	Isaias Afewerki	24.05.1993	ongoing	Anseba	Asmara City	Biher-Tigrinya
Ethiopia	Meles Zenawi	27.05.1991	ongoing	Tigray	Central Tigray	Tigray-Tigrinya
Gabon	Omar Bongo Ondimba	28.11.1967	08.06.2009	Haut-Ogooué	Lé coni-Djoué	Teke
Gambia	Yahya Jammeh	22.07.1994	ongoing	Western	Brikama	Jola
Ghana	John Evans Atta-Mills	07.01.2009	ongoing	Western	Wassa West	Fanti
Ghana	John Agyekum Kufuor	08.01.2001	07.01.2009	Ashanti	Kumasi	Asante
Ghana	Jerry Rawlings	31.12.1981	07.01.2001	Greater Accra	Accra	Ewe
Guinea	Lansana Conté	03.04.1984	22.12.2008	Kindia	Coyah	Susu
Guinea	Sekouba Konate	05.12.2009	21.12.2010	Conarky	Conarky	Mandinka
Guinea	Alpha Conde	21.12.2010	ongoing	Boké	Boké	Mandinka
Guinea	Moussa Dadis Camara	23.12.2008	05.12.2009	Nzérékoré	Nzérékoré	Kpelle
Guinea-Bissau	Joao Bernardo Vieira	01.20.2005	02.03.2009	Bissau	Bissau	Papel
Guinea-Bissau	Raimundo Pereira	02.03.2009	08.09.2009	Oio	Mansaba	
Guinea-Bissau	Malam Bacai Sanha	08.09.2009	ongoing	Oio	Mansaba	Mandinka
Guinea-Bissau	Kumba Iala	18.02.2000	14.09.2003	Cacheu	Bula	Balante
Guinea-Bissau	Henrique Pereira Rosa	28.09.2003	01.10.2005	Bafatá	Bafatá	Balante
Kenya	Daniel arap Moi	22.08.1978	30.12.2002	Rift Valley	Baringo	Kalenjin
Kenya	Mwai Kibaki	31.12.2002	ongoing	Central	Nyeri	Kikuyu
Lesotho	Pakalithal Mosisili	29.05.1998	ongoing	Mohale's Hoek		Basotho
Liberia	Charles Taylor	02.08.1997	11.08.2003	Bomi	Klay	Gola
Liberia	Gyude Bryant	14.10.2003	16.01.2006	Montserrado	Greater Monrovia	Grebo
Liberia	Ellen Johnson Sirleaf	16.01.2006	ongoing	Montserrado	Greater Monrovia	Gola
Libya	Muammar al-Gaddafi	01.09.1969	23.08.2011	Surt		Qadhadhfa

Table A.1 (cont.)

Country	Leader name	Entered office	Left office	ADM1 region	ADM2 region	Ethnicity
Madagascar	Marc Ravalomanana	06.07.2002	17.03.2009	Antananarivo	Analamanga	Merina
Madagascar	Didier Ratsiraka	09.02.1997	06.07.2002	Toamasina	Atsinanana	Malagasy
Madagascar	Andry Rajoelina	17.03.2009	ongoing	Antananarivo	Analamanga	Merina
Malawi	Bakili Muluzi	21.05.1994	24.05.2004	Machinga	SC Chiwalo	Yao
Malawi	Bingu wa Mutharika	24.05.2004	ongoing	Thyolo	TA Nchilamwela	Lhomwe
Mali	Alpha Oumar Konare	08.06.1992	08.06.2002	Kayes	Kayes	Bambara/Fula
Mali	Amadou Toumani Toure	08.06.2002	ongoing	Mopti	Mopti	Fula
Mauritania	Ely Ould Mohamed Vall	03.08.2005	19.04.2007	Nouakchott	Nouakchott	Bidan
Mauritania	Mohammed Ould Abdelaziz	05.08.2009	ongoing	Inchiri	Akjoujt	Bidan
Mauritania	Maaouya Ould Taya	12.12.1984	03.08.2005	Adrar	Atar	Bidan
Mauritania	Ba Mamadou Mbaré	15.04.2009	05.08.2009	Gorgol	Maghama	Fula
Mauritania	Sidi Ould Cheikh Abdellahi	19.04.2007	06.08.2008	Brakna	Aleg	Bidan
Mauritius	Navinchandra Ramgoolam	05.07.2005	ongoing	Port Louis		Hindu
Mauritius	Anerood Jugnauth	18.09.2000	30.09.2003	Plaines Wilhems		Hindu
Mauritius	Navinchandra Ramgoolam	22.12.1995	17.09.2000	Port Louis		Hindu
Mauritius	Paul Berenger	30.09.2003	05.07.2005	Moka		French
Morocco	Mohammed VI of Morocco	23.07.1999	ongoing	Rabat - Salé - Zemmour - Zaer	Rabat	Berber
Mozambique	Armando Emilio Guebuza	02.02.2005	ongoing	Nampula	Murrupula	Makua
Mozambique	Joaquim Alberto Chissano	06.11.1986	02.02.2005	Gaza	Chibuto	Tsonga
Namibia	Sam Daniel Nujoma	21.03.1990	21.03.2005	Omusati	Okahao	Ovambo
Namibia	Hifikepunye Pohamba	21.03.2005	ongoing	Ohangwena	Engela	Ovambo
Niger	Mahamadou Issoufou	07.04.2011	ongoing	Tahoua	Illéla	Hausa
Niger	Salou Djibo	08.02.2010	07.04.2011	Tillabéry	Kollo	Djerma
Niger	Mamadou Tandja	22.12.1999	08.02.2010	Diffa	Ma'iné-Soroa	Fula/Kanuri
Nigeria	Goodluck Jonathan	09.02.2010	ongoing	Bayelsa	Ogbia	Ijaw
Nigeria	Olusegun Obasanjo	29.05.1999	29.05.2007	Ogun	Abeokuta South	Yoruba
Nigeria	Umaru Musa Yar'Adua	29.05.2007	09.02.2010	Katsina	Katsina (K)	Fulani
Republic of the Congo	Denis Sassou Nguesso	15.10.1997	ongoing	Cuvette	Owando	Mbochi
Rwanda	Paul Kagame	19.07.1994	ongoing	Gitarama	Tambwe	Tutsi
Senegal	Abdoulaye Wade	02.04.2000	ongoing	Louga	Kébémer	Wolof
Sierra Leone	Ahmad Tejan Kabbah	10.03.1998	17.09.2007	Eastern	Kailahun	Mende
Sierra Leone	Ernest Bai Koroma	17.09.2007	ongoing	Northern	Bombali	Temne
South Africa	Jacob Zuma	09.05.2009	ongoing	KwaZulu-Natal	Nkandla	Zulu
South Africa	Thabo Mbeki	16.06.1999	24.09.2008	Eastern Cape	Idutywa	Xhosa
Sudan	Umar Hassan Ahmad al-Bashir	30.06.1989	ongoing	Northern	River Nile	Ja'alin
Swaziland	Mswati III of Swaziland	25.04.1986	ongoing	Manzini		Swazi
Tanzania	Jakaya Kikwete	21.12.2005	ongoing	Pwani	Bagamoyo	Kwere
Tanzania	Benjamin Mkapa	23.11.1995	21.12.2005	Mtwara	Masasi	Ngoni
Togo	Faure Gnassingbe	04.05.2005	ongoing	Maritime	Lacs	Kabre
Togo	Gnassingbe Eyadema	14.04.1967	05.02.2005	Kara	Kozah	Kabre/Kabiye
Tunisia	Zine El Abidine Ben Ali	07.11.1987	14.01.2011	Sousse	Sousse Médina	Tunisia Arabs
Tunisia	Fouad Mebazaa	15.01.2011	13.12.2011	Tunis	Bab Souika	Tunisia Arabs
Uganda	Yoweri Museveni	26.01.1986	ongoing	Ntungamo	Ruhaama	Banyankole
Zambia	Frederick Chiluba	02.11.1991	02.01.2002	Copperbelt	Kitwe	Bemba
Zambia	Levy Mwanawasa	03.01.2002	19.08.2008	Copperbelt	Mufulira	Lenje
Zambia	Michael Sata	23.09.2011	ongoing	Northern	Mpika	Bemba
Zimbabwe	Robert Mugabe	04.03.1980	ongoing	Harare	Harare	Shona

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Appendix B   Additional Maps

Figure B.1: Subnational boundaries
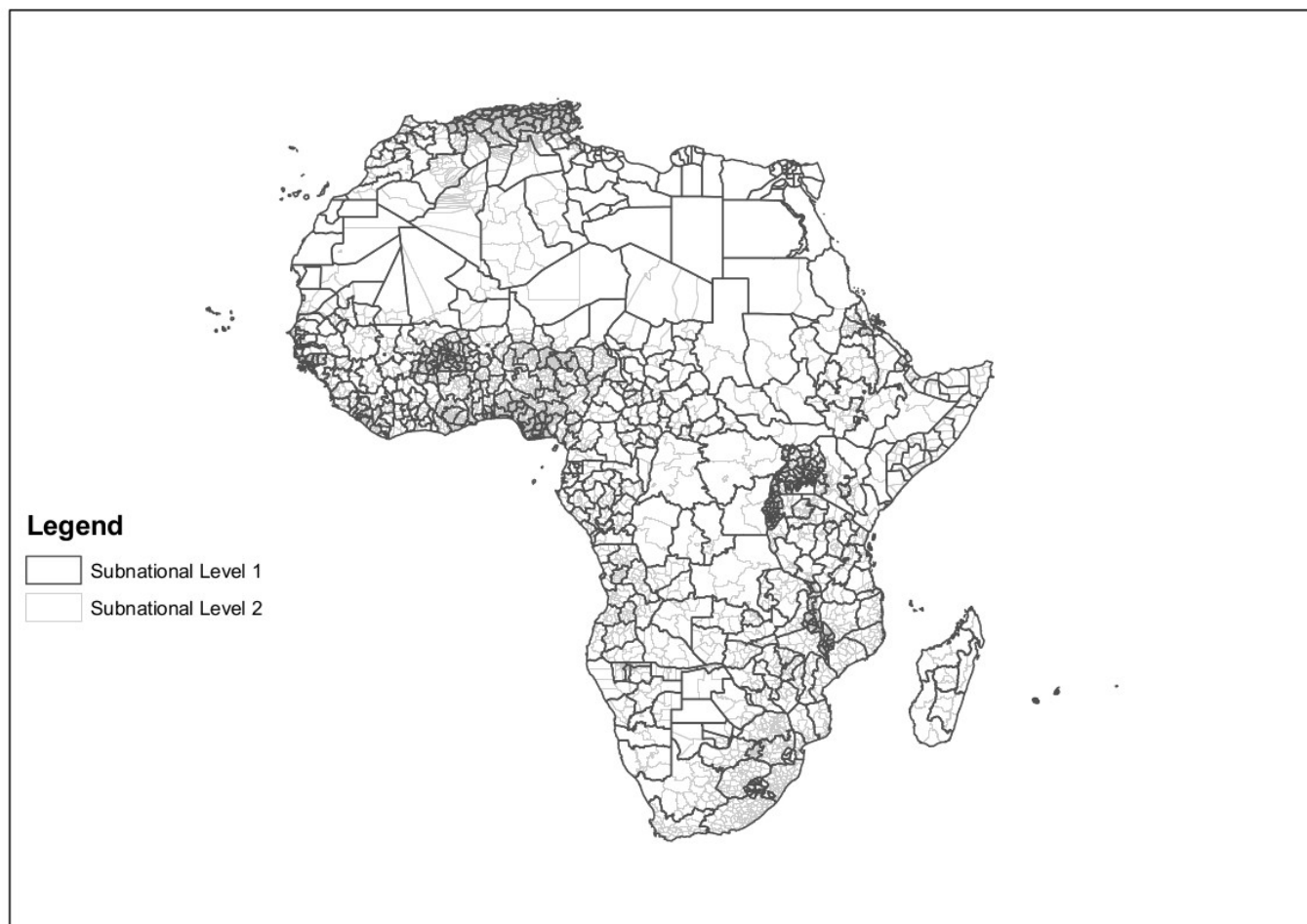
Figure B.2: China's aid projects per subnational unit in Africa (total number of projects, 2000–11, ADM1)
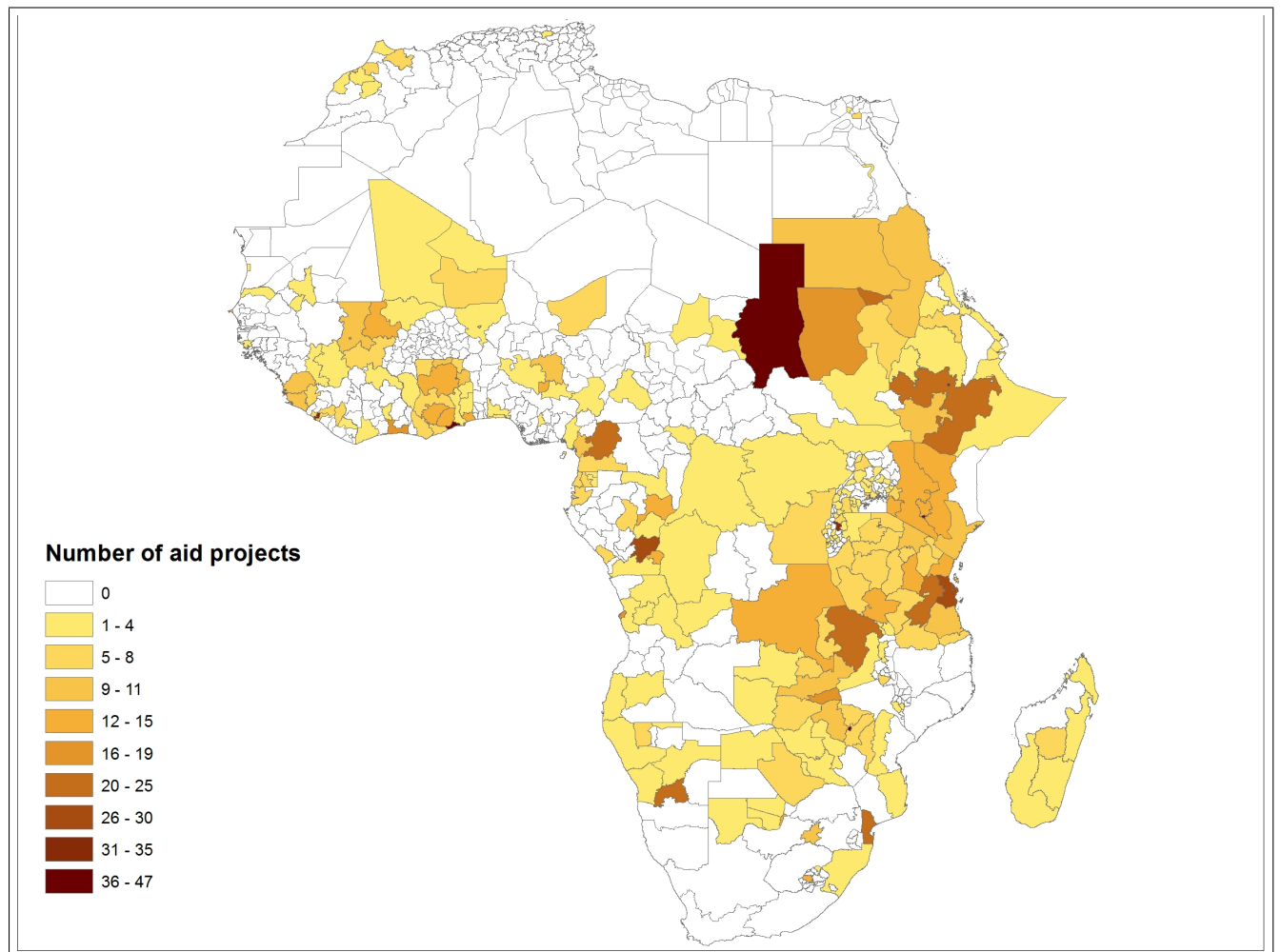
Figure B.3: Value of World Bank aid projects per subnational unit in Africa (total value in million 2009 US$, 2000–11, ADM1)

Total commitments (in million US$)

- $0.00
- $0.01 - $1.00
- $1.01 - $5.00
- $5.01 - $10.00
- $10.01 - $47.06
- $47.07 - $71.78
- $71.79 - $100.00
- $100.01 - $250.00
- $250.01 - $500.00
- $500.01 - $750.00
- $750.01 - $2,000.00
- $2,000.01 - $3,000.00
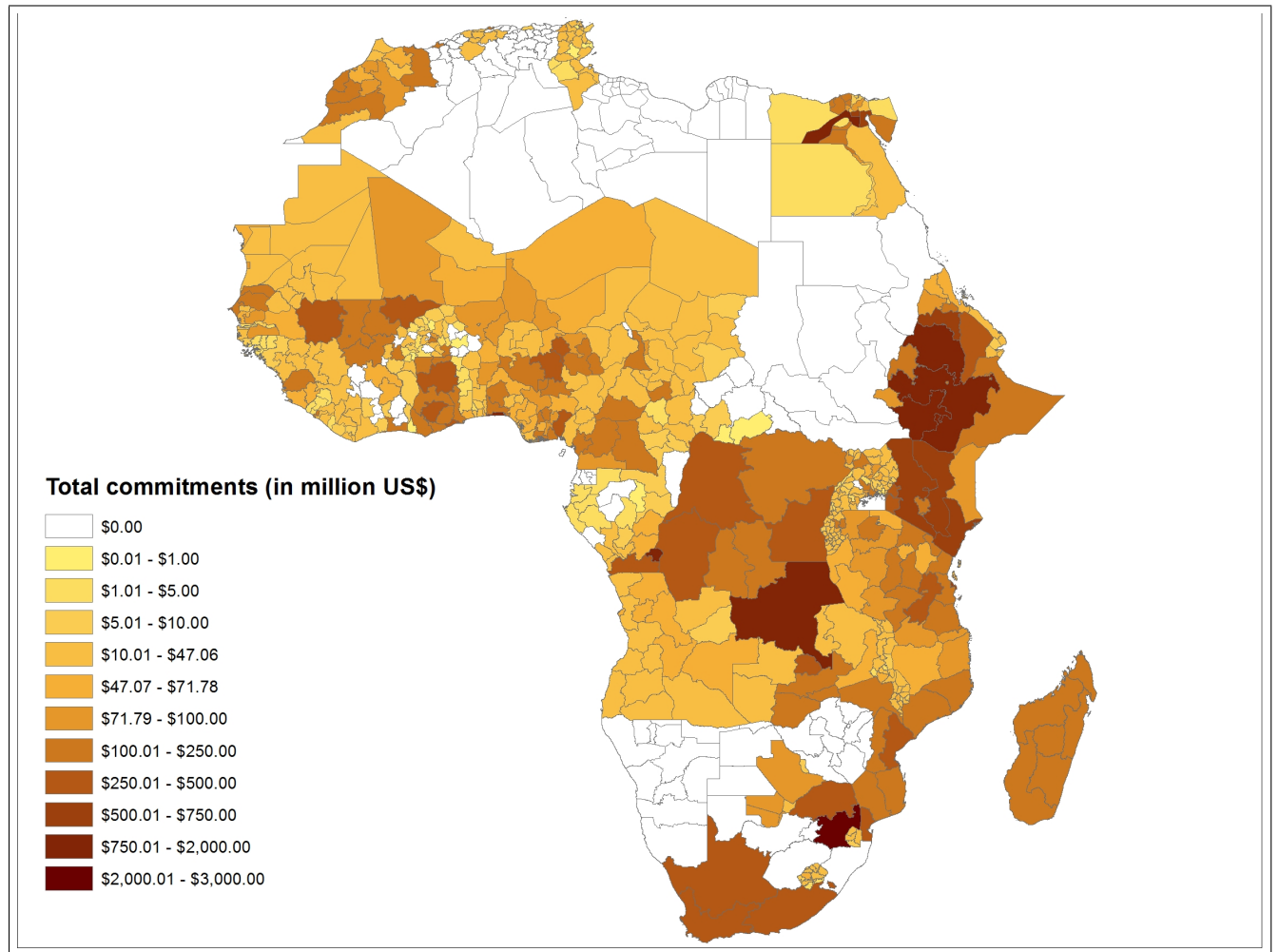
Figure B.4: World Bank aid projects per subnational unit in Africa (total number of projects, 2000–11, ADM1)
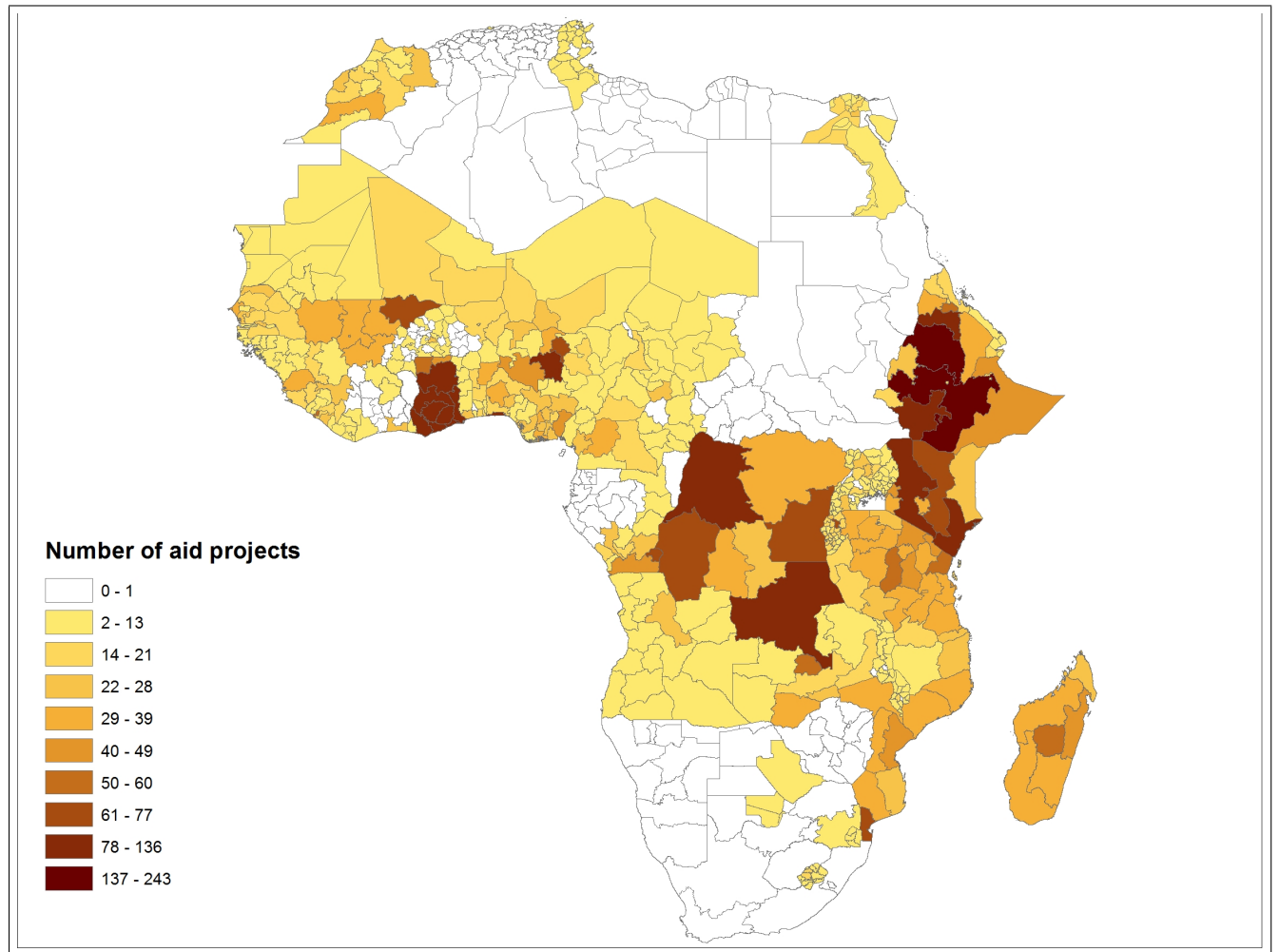
Appendix C   Aid Allocation - Additional Regressions

Table C.1: Differential effects across sectors, China, ADM1, OLS, 2000–11

	(1)	(2)	(3)
Units of obs.	ADM1	ADM1	ADM1
Sector	Social	Economic	Production
Birthregion	0.624**	0.307	0.275*
	(0.272)	(0.248)	(0.156)
Country-year FE	yes	yes	yes
Region FE	yes	yes	yes
R-squared	0.266	0.275	0.112
Observations	8,370	8,459	8,470
Number of regions	709	709	709

Notes: Standard errors (in parentheses) clustered at the leader level. ** (*): significant at the 5% (10%) level.

Social Infrastructure & Services: Education, Health, Population Pol./Progr. & Reproductive Health, Water Supply & Sanitation, Government & Civil Society, Other Social Infrastructure & Services.

Economic Infrastructure & Services: Transport & Storage, Communications, Energy, Banking & Financial Services, Business & Other Services.

Production Sectors: Agriculture, Forestry, Fishing, Industry, Mining, Construction, Trade Policies & Regulations, Tourism.

Table C.2: Birth regions and China's aid, heterogeneous effects, OLS, country-year and region fixed effects, 2000–11

	(1) ADM1	(2) ADM1	(3) ADM1	(4) ADM1	(5) ADM1	(6) ADM1	(7) ADM1	(8) ADM1	(9) ADM1	(10) ADM1
Units of obs.										
Dependent variables	Total flows (in logs)	Total flows (in logs)	Total flows (in logs)	Total flows (in logs)	Total flows (in logs)	Total flows (in logs)	Total flows (in logs)	Total flows (in logs)	Total flows (in logs)	Total flows (in logs)
Interacted with	Tenure	Polity	Bureau-cracy	Corrup.	School	Oil gas	Mines	UN agreem.	UN dist.	Lagged light
Birthregion	1.437***	-0.467	2.301***	0.375	-0.040	1.244***	0.991	6.138	0.768	2.113***
	(0.484)	(1.552)	(0.844)	(1.365)	(0.836)	(0.441)	(0.798)	(11.754)	(0.569)	(0.715)
Interaction	-0.060	2.350	-0.822	0.427	0.208	-0.760	0.031	-5.246	1.021	0.559**
	(0.053)	(2.128)	(0.624)	(0.612)	(0.198)	(0.719)	(0.286)	(11.812)	(1.996)	(0.240)
Country-year FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Region FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.296	0.296	0.314	0.314	0.307	0.296	0.296	0.296	0.296	0.298
Observations	8,327	8,303	6,937	6,937	6,239	8,327	8,327	8,187	8,187	8,327

Notes: Standard errors (in parentheses) clustered at the leader level. *** (**): significant at the 1% (5%) level. Column 10 further includes Lagged light in levels. Sources of interacted variables:

Tenure: Goemans et al.'s (2009) Archigos dataset, updated in Dreher and Yu (2016)

Polity: Polity IV Project, Political Regime Characteristics and Transitions, 1800-2013, http://www.systemicpeace.org/inscrdata.html

Bureaucracy and *Corruption:* International Country Risk Guide (ICRG), http://www.prsgroup.com/about-us/our-two-methodologies/icrg

School: Barro, Robert, and Jong-Wha Lee. 2010. A New Data Set of Educational Attainment in the World, 1950-2010. *Journal of Development Economics* 104: 184-198.

Oil gas, Mines, and *Lagged light:* See main text.

UN agreem. and *UN distance:* Bailey, Michael, Anton Strezhnev, and Erik Voeten. Forthcoming. Estimating Dynamic State Preferences from United Nations Voting Data. *Journal of Conflict Resolution.*

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Table C.3: Birth regions of leaders' spouses and China's aid, OLS, country-year and region fixed effects, 2000–11

	(1)	(2)
Units of obs.	ADM1	ADM2
Dependent variables	Total flows (in logs)	Total flows (in logs)
Birthregion	0.992***	0.084*
	(0.364)	(0.047)
Birthregion spouse	1.020*	0.102*
	(0.521)	(0.052)
R-squared	0.297	0.098
Observations	8,327	69,817
Number of regions	709	5,835

Notes: Standard errors (in parentheses) clustered at the leader level. *** (*): significant at the 1% (10%) level.

Table C.4: ADM2 birth regions and China's aid, OLS, country-year and region fixed effects, 2000–11

	(1)	(2)	(3)	(4)	(5)	(6)
Units of obs.	ADM2	ADM2	ADM2	ADM2	ADM2	ADM2
Dependent variables	Total flows (in logs)	ODA-like flows (in logs)	Project dummy	Total flows (in logs)	ODA-like flows (in logs)	Project dummy
Birthregion ADM2	0.554**	0.392*	0.036**	0.277	0.281	-0.004
	(0.252)	(0.204)	-0.016	(0.257)	(0.221)	-0.018
Light2000	0.060***	0.038**	0.005***			
	(0.018)	(0.015)	-0.001			
Population2000	0.028*	0.008	0.002**			
	(0.014)	(0.009)	-0.001			
Capitalregion	4.625***	3.229***	0.323***			
	(0.527)	(0.430)	-0.032			
Mines	0.020	-0.001	0.002			
	(0.027)	(0.013)	-0.002			
Oilgas	-0.053	-0.039	-0.004*			
	(0.036)	(0.026)	-0.002			
Area	0.039***	0.023**	0.003***			
	(0.013)	(0.009)	-0.001			
Ports	0.158*	0.038	0.012**			
	(0.087)	(0.059)	-0.006			
Roaddensity	0.360	0.322**	0.018			
	(0.219)	(0.159)	-0.011			
Country-year FE	yes	yes	yes	yes	yes	yes
Region FE	no	no	no	yes	yes	yes
R-squared	0.184	0.152	0.201	0.098	0.068	0.105
Observations	69,054	69,115	69,252	69,817	69,880	70,020
Number of regions	5,835	5,835	5,835	5,835	5,835	5,835

Notes: Standard errors (in parentheses) clustered at the leader level. *** (**, *): significant at the 1% (5%, 10%) level. $BirthregionADM2_{ict}$ is equal to 1 if the political leader of country c in year t was born in ADM2 region i.

Table C.5: Birth regions with lead and lags and China's aid, OLS, country-year and region fixed effects, 2000–11

	(1)	(2)	(3)	(4)	(5)	(6)
Units of obs.	ADM1	ADM2	ADM1	ADM2	ADM1	ADM2
Dependent variables	Total flows (in logs)	Total flows (in logs)	ODA-like flows (in logs)	ODA-like flows (in logs)	Project dummy	Project dummy
Birthregion	1.246***	0.139**	0.592*	0.074**	0.039	0.003
	(0.400)	(0.056)	(0.303)	(0.036)	(0.024)	(0.004)
Prebirth	0.428	0.022	-0.773	-0.063	0.037	0.000
	(0.900)	(0.092)	(0.557)	(0.057)	(0.059)	(0.007)
Postbirth (1 year)	1.395	0.201	0.835	0.105	0.033	0.014
	(0.853)	(0.132)	(0.757)	(0.080)	(0.053)	(0.013)
Postbirth (2 years)	-0.478	0.050	-0.006	0.092	-0.044	-0.006
	(0.502)	(0.101)	(0.613)	(0.097)	(0.056)	(0.007)
Country-year FE	yes	yes	yes	yes	yes	yes
Region FE	yes	yes	yes	yes	yes	yes
R-squared	0.297	0.098	0.278	0.068	0.285	0.105
Observations	8,327	69,817	8,375	69,880	8,508	70,020
Number of regions	709	5,835	709	5,835	709	5,835

Notes: Standard errors (in parentheses) clustered at the leader level. *** (**, *): significant at the 1% (5%, 10%) level.

Appendix D   Aid Effectiveness - Data

- The instrumental variable $\bar{A}_{ic} \times Steel_t$ is the interaction between the propensity of region i to receive Chinese aid—$\bar{A}_{ic}$—and Chinese steel production in year t—$Steel_t$. $\bar{A}_{ic}$ is the fraction of years between 2001 and 2011 that region i received any Chinese funding, that is $\bar{A}_{ic} = [\frac{1}{12} \sum_{t=2000}^{2011} A_{ict}] \cdot 100$, where A_{ict} is a binary indicator variable that is one if subnational region i in country c received any Chinese funding in year t. $Steel_t$ is the natural log of China's total production of crude steel per year (in thousand tons). The raw data are taken from the World Steel Association (2010, 2014).

- The control variable *Trade flows with China* is the sum of imports and exports between China and country c in year t (in million USD). The raw data are taken from Head et al. (2011).

- The control Variable *FDI from China* is the total flow of foreign direct investment (FDI) from China to country c in year t (in million USD). The data are taken from the World Investment Report 2015 (UNCTAD 2015).

- China's Cold War Aid Projects: Bartke's (1989) data include 520 completed Chinese aid projects in 47 African countries over the 1956–1987 period and are collected from Chinese sources and secondary sources. We georeferenced all projects and obtained 688 project locations across the African continent.

Appendix E   Aid Effectiveness - Additional Regressions

Table E.1: Aid effectiveness estimates ADM1 and ADM2, alternative IV (interaction with China's Cold War aid)

Time lag τ	1	2	3
	Panel A. ADM1 - 2SLS estimates		
$Aidpc_{ict-\tau}$	0.0375	0.0391	0.0476
	(0.113)	(0.0887)	(0.0879)
Other controls	Yes	Yes	Yes
F-stat *Aidpc*	6.40	6.31	5.99
Observations	8,671	8,004	7,337
	Panel B. ADM2 - 2SLS estimates		
$Aidpc_{ict-\tau}$	0.2850**	0.3110*	0.3320**
	(0.1240)	(0.160)	(0.1420)
Other controls	Yes	Yes	Yes
F-stat *Aidpc*	8.75	6.45	7.69
Observations	72,527	66,948	61,369

Notes: Standard errors (in parentheses) clustered both at the region and year level. ** (*): significant at the 5% (10%) level. Dependent variable: $Lightpc_{ict}$. All specifications include country-year and region fixed effects. Other controls are $\bar{A}_{ic} \times$ *FDI from China*$_{ct-1}$ and $\bar{A}_{ic} \times$ *Trade Flows with China*$_{ct-\tau}$.

Table E.2: Reduced form estimates ADM1 and ADM2

Time lag τ	1	2	3
	Panel A. ADM1 Estimates		
$\bar{A}_{ic} \times Steel_{t-\tau}$	0.0006	0.0008	0.0010**
	(0.0005)	(0.0005)	(0.0004)
Observations	9,217	8,508	7,799
	Panel B. ADM2 Estimates		
$\bar{A}_{ic} \times Steel_{t-\tau}$	0.0015**	0.0019***	0.0023***
	(0.0006)	(0.0006)	(0.0005)
Observations	75,023	69,252	63,481

Notes: Standard errors (in parentheses) clustered both at the region and year level. *** (**): significant at the 1% (5%) level. Dependent variable: $Lightpc_{ict}$. All specifications include country-year and region fixed effects.

Table E.3: Aid effectiveness and birth regions ADM1

Time lag τ	1	2	3
	Panel A. ADM1 - OLS estimates		
$Aidpc_{ict-\tau}$	0.0046	0.0001	0.0034
	(0.0034)	(0.0018)	(0.0021)
$Aidpc_{ict-\tau}$	-0.0014	0.0055	0.0076
$\times Birthregion_{ict-\tau}$	(0.0058)	(0.0069)	(0.0055)
$Birthregion_{ict-\tau}$	0.0011	0.0259	0.0365
	(0.0293)	(0.0327)	(0.0287)
Other controls	Yes	Yes	Yes
Observations	9,217	8,508	7,799
	Panel B. ADM1 - 2SLS estimates		
$Aidpc_{ict-\tau}$	0.0540	0.0580	0.0778**
	(0.0374)	(0.0400)	(0.0387)
$Aidpc_{ict-\tau}$	0.00588	0.00784	0.0208
$\times Birthregion_{ict-\tau}$	(0.0465)	(0.0681)	(0.0692)
$Birthregion_{ict-\tau}$	-0.0125	0.0157	0.0262
	(0.0459)	(0.0562)	(0.0486)
Other controls	Yes	Yes	Yes
Observations	8,671	8,004	7,337
F-stat $Aidpc$	9.81	11.64	9.26
F-stat $Aidpc\times Birthregion$	36.03	28.10	24.91

Notes: Standard errors (in parentheses) clustered both at the region and year level. **: significant at the 5% level. The dependent variable is $Lightpc_{ict}$. Other controls are $\bar{A}_{ic}\times$ *FDI from China$_{ct-1}$* and $\bar{A}_{ic}\times$ *Trade Flows with China$_{ct-\tau}$*. All specifications include region and country-year fixed effects. To test whether there is a differential effect of Chinese aid on subnational development in a leader's birth region compared to other regions, we estimate the following equation (and also adapt the first-stage regressions accordingly):

$$Lightpc_{ict} = \alpha_{ct} + \delta_{ic} + \varphi Aidpc_{ict-\tau} + \theta Aidpc_{ict-\tau} \times Birthregion_{ict} + \gamma Birthregion_{ict} + \nu_{ict}.$$

We instrument the interaction between leaders' birth regions and Chinese aid with the interaction between birth regions and our instrument for aid. As can be seen, the interaction between subnational aid distribution and leader birth region is not significantly different from zero in any of the specifications. This implies that aid given to birth regions has the same developmental effect as aid given at other times.

Table E.4: Aid effectiveness and birth regions ADM2

Time lag τ	1	2	3
	Panel A. OLS Estimates		
$Aidpc_{ict-\tau}$	0.0045*	0.0043*	0.0086**
	(0.0024)	(0.0024)	(0.0037)
$Aidpc_{ict-\tau}$	0.0021	0.0061	0.0053
$\times Birthregion_{ict-\tau}$	(0.0049)	(0.0064)	(0.0056)
$Birthregion_{ict-\tau}$	-0.0202***	-0.0263***	-0.0200**
	(0.0074)	(0.0097)	(0.0088)
	Panel B. 2SLS Estimates		
$Aidpc_{ict-\tau}$	0.0574	0.0729*	0.0960***
	(0.0362)	(0.0421)	(0.0317)
$Aidpc_{ict-\tau}$	-0.0036	0.0303	0.0580
$\times Birthregion_{ict-\tau}$	(0.0278)	(0.0291)	(0.0405)
$Birthregion_{ict-\tau}$	-0.0212***	-0.0292***	-0.0241**
	(0.0078)	(0.0101)	(0.0095)
Other controls	Yes	Yes	Yes
Observations	72,527	66,948	61,369
F-stat $Aidpc$	14.34	13.03	11.28
F-stat $Aidpc \times Birthregion$	56.85	50.35	36.85

Notes: Standard errors (in parentheses) clustered both at the region and year level. *** (**, *): significant at the 1% (5%, 10%) level. See Table E.3 for a detailed description of the empirical strategy.

Table E.5: Aid effectiveness estimates (3-year averages)

Level	ADM1	ADM2
	Panel A. OLS Estimates	
$Aidpc_{ict-1}$	0.0070**	0.0145**
	(0.0032)	(0.0065)
Observations	2,836	23,084
	Panel B. First Stage Estimates	
$\bar{A}_{ic} \times Steel_{t-1}$	0.0227***	0.0353***
	(0.0048)	(0.0068)
$\bar{A}_{ic} \times Trade\ Flows\ with\ China_{ct-1}$	-0.0000**	0.0000
	(0.0000)	(0.0000)
$\bar{A}_{ic} \times FDI\ from\ China_{ct-1}$	-0.0000***	0.0000
	(0.0000)	(0.0000)
Observations	2,668	22,316
	Panel C. 2SLS Estimates 1	
$Aidpc_{ict-1}$	0.0688**	0.0762***
	(0.0282)	(0.0157)
Observations	2,836	23,084
F-stat *Aidpc*	9.06	23.39
	Panel D. 2SLS Estimates 2	
$Aidpc_{ict-1}$	0.0630**	0.0593***
	(0.0245)	(0.0184)
$\bar{A}_{ic} \times Trade\ Flows\ with\ China_{ct-1}$	0.0000	0.000
	(0.000)	(0.000)
$\bar{A}_{ic} \times FDI\ from\ China_{ct-1}$	0.000	0.000
	(0.000)	(0.000)
Observations	2,668	22,316
F-stat *Aidpc*	17.05	20.13

Notes: Data are grouped into the following three-year periods: 2000–02, 2003–05, 2006–08, 2009–2011, and 2012–13 (no data are available for 2014). Standard errors (in parentheses) clustered both at the region and year level. *** (**): significant at the 1% (5%) level. Dependent variable: $Lightpc_{ict}$. All specifications include country-year and region fixed effects.