

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

Axel Dreher, Andreas Fuchs, Roland Hodler, Bradley C. Parks, Paul A. Raschky, and Michael J. Tierney

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 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.

Keywords: Foreign aid, Favoritism, Aid allocation, Aid effectiveness, Africa, China, Official Development Assistance, Georeferenced data, Spatial analysis

The views expressed in AidData Working Papers are those of the authors and should not be attributed to AidData or funders of AidData's work, nor do they necessarily reflect the views any of the many institutions or individuals acknowledged here.

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

Axel Dreher

*Alfred-Weber-Institute for Economics,
Heidelberg University;
KOF Swiss Economic Institute;
CEPR;
Georg-August University Goettingen; and
CESifo*

Correspondence to: mail@axel-dreher.de

Andreas Fuchs

*Alfred-Weber-Institute for Economics,
Heidelberg University*

Correspondence to: mail@andreas-fuchs.net

Roland Hodler

*Department of Economics and SIAW-HSG,
University of St. Gallen;
CEPR;
and CESifo*

Correspondence to: roland.hodler@unisg.ch

Bradley C. Parks

*Institute for the Theory and Practice of International Relations,
The College of William & Mary*

Correspondence to: bcpark@wm.edu

Paul A. Raschky

*Department of Economics,
Monash University*

Correspondence to: paul.raschky@monash.edu.au

Michael J. Tierney

*Department of Government,
The College of William & Mary*

Correspondence to: mjtier@wm.edu

AidData:

info@aiddata.org
www.aiddata.org

AidData is a research lab located at the College of William & Mary that seeks to make development finance more transparent, accountable, and effective. Users can track over \$40 trillion in funding for development, including remittances, foreign direct investment, aid, and, most recently, US private foundation flows, all on a publicly accessible data portal on AidData.org. AidData's work is made possible through funding from and partnerships with USAID, the World Bank, the Asian Development Bank, the African Development Bank, the Islamic Development Bank, the Open Aid Partnership, DFATD, the Hewlett Foundation, the Gates Foundation, Humanity United, and 20+ finance and planning ministries in Asia, Africa, and Latin America.

Acknowledgments:

We thank Kurt Annen, Marta Curto-Grau, Martin Gassebner, Andreas Kotsadam, Gregory Lévieu, Jamus Lim, Yannick Lucotte, Takaaki Masaki, Ibrahim Okumu, Duncan Snidal, Heiwai Tang, Huang Yi, Ekkart Zimmermann, conference participants at the Convening of the AidData Research Consortium at the College of William & Mary in Williamsburg, Virginia (January 2014), the Annual Conference of the International Political Economy Society in Washington, DC (November 2014), the Inaugural Sheffield Workshop in Political Economy at the University of Sheffield (February 2015), the European Public Choice Society Meeting at the University of Groningen, the IMF Conference on Financing for Development at the Graduate Institute of International and Development Studies in Geneva (April 2015), the International Conference on Globalization and Development at the University of Goettingen (May 2015), the Annual Conference of the Verein für Socialpolitik Research Committee Development Economics at the Kiel Institute for the World Economy, the Nordic Conference on Development Economics at the University of Copenhagen (June 2015), the Silvaplana Workshop on Political Economy (July 2015), the European Economic Association Meeting at the University of Mannheim (August 2015), the Annual Conference on the Political Economy of International Organizations at the University of Utah (January 2016), the CSAE Conference “Economic Development in Africa” at the University of Oxford (March 2016), the Development Economics Conference “Goettinger Schule” at the University of Goettingen (June 2016), the Workshop on “Global Challenges” at the Università degli Studi di Milano Bicocca (June 2016), the China Economics Summer Institute at the Hong Kong University of Science and Technology (August 2016), the Annual Meeting of the American Political Science Association in Philadelphia, and the Frisch-PRIO Workshop on Foreign Aid in Oslo (September 2016), as well as seminar audiences at the European Bank for Reconstruction and Development in London (October 2014), NHH Bergen, the University of Bergen, KOF Zurich (November 2014), Heidelberg University (December 2014), the University of York (February 2015), the University of Mannheim, the ESG Management School Paris, Université de Fribourg (March 2015), the University of Gothenburg (April 2015), Goethe University Frankfurt, the Norwegian Business School (May 2015), the Research Institute of Industrial Economics (September 2015), the Université libre de Bruxelles, the University of Kiel (January 2016), the University of Geneva (February 2016), Deakin University, the University of Melbourne (March 2016), and Villanova University (September 2016) for helpful comments.

We also thank Humanity United and the Hewlett Foundation for the generous funding that made this research possible. Axel Dreher and Andreas Fuchs are grateful for generous support from the German Research Foundation (DFG) in the framework of the project “The Economics of Emerging Donors in Development Cooperation” at Heidelberg University (DR 640/5-1 and FU 997/1-1). Roland Hodler and Paul Raschky are grateful for generous support from the Australian Research Council (ARC DP150100061). Evelyn Hytopoulos, Scott Stewart, Charles Perla, Harsh Desai, Daniel Lantz, Lauren Su, Catherine Crowley, Faith Savaino, Melanie Gilbert, Torey Beth Jackson, Tiffanie Choi, Rebecca Thorpe, Darice Xue, Jiaorui Jiang, Junrong Zhu, Ze Fu, Zach Baxter, Graeme Cranston Cuebas, Xiao Liu, Emily Qiu, Hanyang Xu, Dylan Kolhoff, Grace Perkins, Yue Zhang, Rohan Desai, Will Nelson, Ryan Septon, Elizabeth Saccoccia, Rachel Benavides, Dominic Sanzotta, Michael Hathaway, Warren Kirkwood, Connor Kennedy, Laura Preszler, Andrea Soleta, Sara Gomez, Tom Westover, Ann Rogers, Nate Tanner, Rebecca Schectman, Matt Westover, Sara Rock, Jordan Fox, Emily Tanner, Rachel Kellogg, Austin Trotta, Isabel Docampo, Lu Sevier, Joseph Dobbels, Julia Varoutsos, Steven Livingston, Victor Polanco, Emily McLenigan, Bilal Asad, Qi Jiang, Anna Umstead, Lauren Harrison, James Willard, Robert Francis, Justin DeShazor, McKay Corbett, Brittany Tennant, Dominick Margiotta, and Daniel Overbeck provided outstanding research assistance.

Contents

Abstract	1
1. Introduction	4
2. The Demand Side of China's Aid Allocation	8
3. Method and Data	13
4. Results	21
5. Does Chinese Aid Affect Development Outcomes?	30
6. Conclusions	37
Appendix A. Leader Data	40
Appendix B. Additional Maps	42
Appendix C. Aid Allocation - Additional Regressions	46
Appendix D. Aid Effectiveness - Data	51
Appendix E. Aid Effectiveness - Additional Regressions	52
References	56

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 development projects for patronage politics. Specifically, we study whether Chinese aid is disproportionately allocated to the birth regions of the political leaders

¹We 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.

²These 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/>.

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 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

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

region fixed effects.

On the contrary, there is no evidence that World Bank funding flows disproportionately 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 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

⁴Prominent 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).

⁵While 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.

⁶Ideally, 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.

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 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

⁷Recent 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.

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

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

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

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, 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

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).

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 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

¹³As 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.

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

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 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

¹⁵China 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).

¹⁶Additionally, 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).

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 governments 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 Sinohydro "[took] important risks to meet [...] political pressures from the circle around President Kabila" and quickly implemented high-profile

¹⁷The 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).

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 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

¹⁸It 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).

¹⁹When 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).

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 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):

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

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

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

²⁰We 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.

²¹The 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 ADM2 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.

²²We 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.

²³We 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,

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 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

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.

²⁴Specifically, 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>.

²⁵See 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.

²⁶Unsurprisingly, 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.

²⁷Because 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.

geocoded at the ADM1 level and 1,575 project locations at the ADM2 level.²⁸ In the analysis based on ethnic regions, we 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.

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 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

²⁸These numbers are about half the total number of locations our database covers. This is because there is imprecise information on the exact locations of projects.

²⁹The 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.”

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

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

Figure 1. Value of Chinese aid projects per subnational unit in Africa (total value in million 2009 US\$, 2000–11, ADM1)

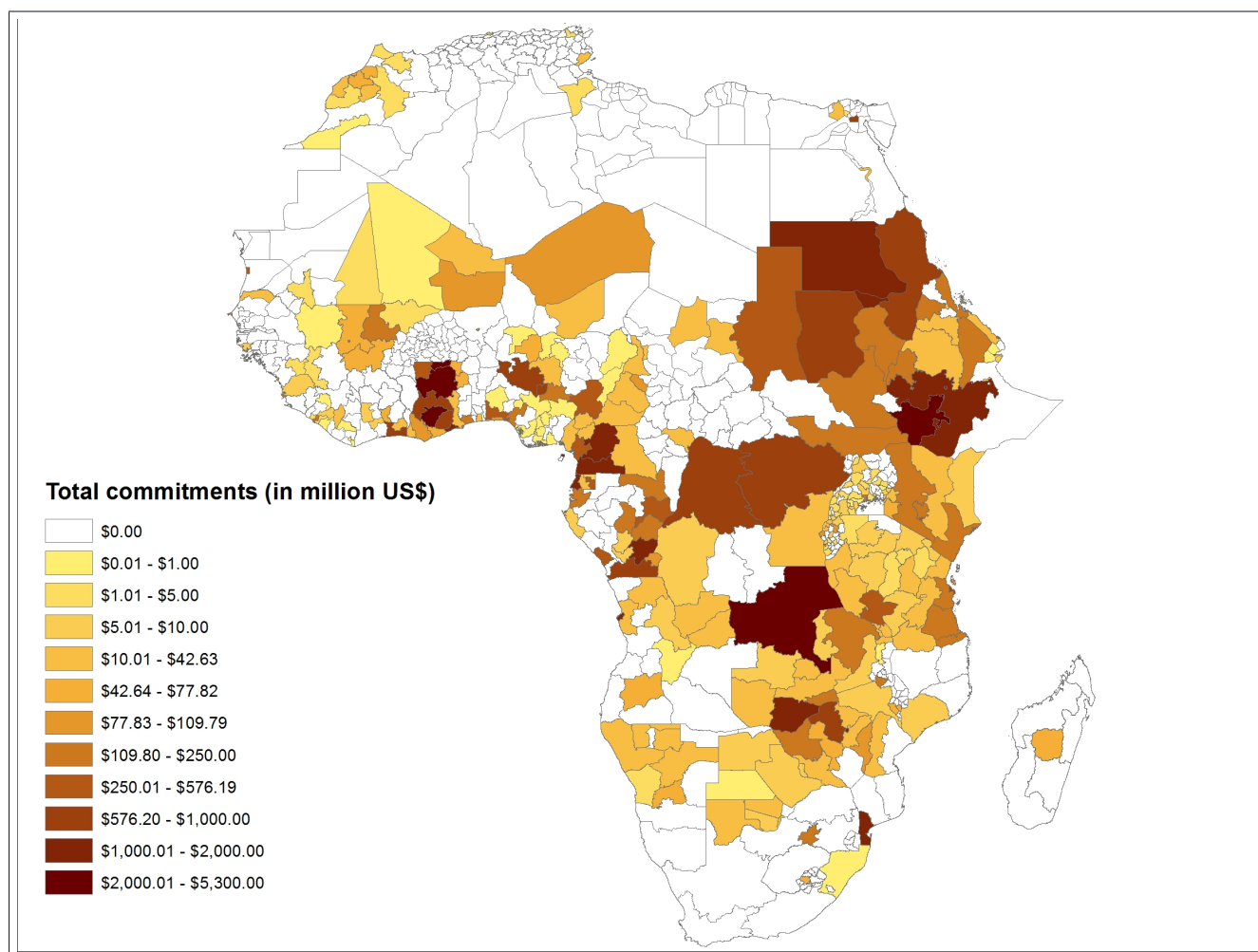
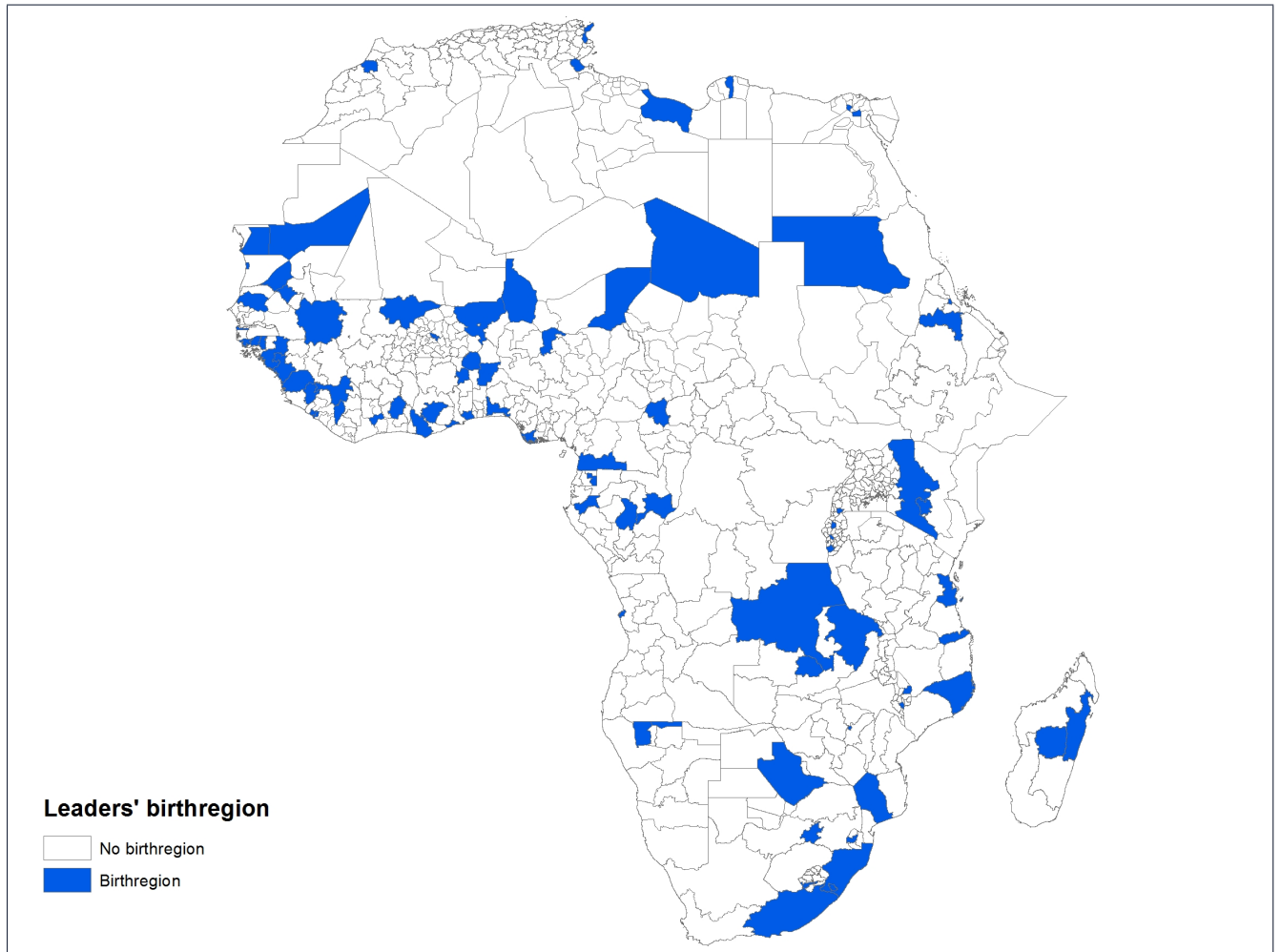


Figure 2. Birth regions of effective political leaders in Africa (2000–11, ADM1)



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 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

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

³³We 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).

³⁴At 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.

³⁵Archigos 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.

³⁶We 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.

³⁷See <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>).

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 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.

³⁸Changes 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.

³⁹Weather 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.

⁴⁰We 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.

⁴¹This 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.

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

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.

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

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

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

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

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** (0.323)	0.095* (0.056)	0.283 (0.206)	0.019 (0.035)	0.032* (0.019)	0.003 (0.003)
Light2000	0.293** (0.114)	0.061*** (0.019)	0.242** (0.120)	0.039** (0.015)	0.021*** (0.007)	0.005*** (0.001)
Population2000	0.087 (0.087)	0.028* (0.014)	0.014 (0.073)	0.009 (0.009)	0.009 (0.006)	0.002** (0.001)
Capitalregion	4.164*** (0.496)	4.677*** (0.537)	2.837*** (0.398)	3.264*** (0.437)	0.269*** (0.028)	0.327*** (0.032)
Mines	0.117* (0.066)	0.021 (0.026)	0.003 (0.039)	-0.000 (0.013)	0.008* (0.004)	0.002 (0.002)
Oilgas	0.070 (0.132)	-0.058* (0.035)	0.077 (0.122)	-0.043 (0.026)	-0.000 (0.008)	-0.004* (0.002)
Area	0.234*** (0.085)	0.041*** (0.013)	0.183** (0.077)	0.024*** (0.009)	0.018*** (0.006)	0.003*** (0.001)
Ports	-0.068 (0.187)	0.160* (0.086)	-0.155 (0.146)	0.039 (0.059)	-0.007 (0.012)	0.013** (0.006)
Roaddensity	1.145 (1.130)	0.358 (0.220)	1.181 (0.865)	0.324** (0.158)	0.104 (0.066)	0.018 (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.

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

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.

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

⁴⁴This 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.

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 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

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

⁴⁶By 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.

⁴⁷We 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.

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*** (0.369)	0.105** (0.043)	0.569* (0.301)	0.055* (0.030)	0.036* (0.022)	0.002 (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.

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

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 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

⁴⁸We 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.

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*** (0.378)	0.132*** (0.049)	0.593* (0.307)	0.060* (0.032)	0.045** (0.023)	0.004 (0.003)
Prebirth	0.467 (0.893)	0.018 (0.087)	-0.772 (0.562)	-0.071 (0.057)	0.040 (0.058)	0.001 (0.007)
Postbirth	1.471* (0.816)	0.191 (0.120)	0.836 (0.731)	0.088 (0.073)	0.040 (0.050)	0.015 (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.

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.

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

⁴⁹We 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).

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. 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

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

⁵⁰These 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.

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

Units of obs.	(1) ADM1	(2) ADM2	(3) ADM1	(4) ADM2	(5) ADM1	(6) 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)	0.136 (0.111)	0.119 (0.137)	0.163 (0.106)	-0.011 (0.016)	0.009 (0.007)
Light2000	0.148*** (0.037)	0.226*** (0.039)	0.157*** (0.037)	0.223*** (0.039)	0.032*** (0.009)	0.014*** (0.003)
Population2000	0.387*** (0.133)	0.171*** (0.052)	0.336** (0.139)	0.155*** (0.051)	0.045*** (0.008)	0.011*** (0.003)
Capitalregion	0.217 (0.184)	3.167*** (0.545)	0.136 (0.174)	3.035*** (0.545)	0.059*** (0.020)	0.184*** (0.032)
Mines	0.129*** (0.048)	0.073 (0.071)	0.102** (0.051)	0.047 (0.065)	0.008 (0.005)	0.004 (0.004)
Oilgas	-0.128 (0.121)	-0.206* (0.109)	-0.104 (0.118)	-0.183* (0.110)	-0.000 (0.013)	-0.013* (0.007)
Area	0.223*** (0.059)	0.188*** (0.040)	0.240*** (0.058)	0.188*** (0.039)	0.023** (0.010)	0.012*** (0.003)
Ports	0.192* (0.112)	0.509*** (0.168)	0.172 (0.114)	0.431** (0.176)	-0.010 (0.012)	0.032*** (0.011)
Roaddensity	0.252 (0.468)	0.307 (0.222)	0.345 (0.459)	0.314 (0.227)	0.048 (0.056)	0.018 (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

Units of obs.	(1) ADM1	(2) ADM2	(3) ADM1	(4) ADM2	(5) ADM1	(6) 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 (0.160)	0.192 (0.129)	-0.059 (0.156)	0.196 (0.129)	-0.026 (0.025)	0.014 (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

Units of obs. Donor	(1) GREG China	(2) GREG China	(3) GREG China	(4) GREG World Bank	(5) GREG World Bank	(6) GREG 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	1.020*** (0.268)	0.524** (0.226)	0.065*** (0.017)	0.294 (0.300)	0.214 (0.306)	0.015 (0.017)
Light2000	0.227*** (0.052)	0.119*** (0.041)	0.015*** (0.003)	0.449*** (0.078)	0.506*** (0.075)	0.027*** (0.005)
Population2000	0.016 (0.057)	-0.022 (0.039)	0.003 (0.003)	0.281*** (0.088)	0.140 (0.088)	0.016*** (0.005)
Capitalregion	4.682*** (0.540)	3.495*** (0.459)	0.306*** (0.031)	2.803*** (0.444)	2.447*** (0.439)	0.152*** (0.026)
Mines	0.233** (0.117)	0.188* (0.111)	0.017** (0.007)	-0.030 (0.209)	-0.066 (0.200)	-0.003 (0.012)
Oilgas	-0.138 (0.300)	-0.256 (0.224)	-0.030 (0.021)	0.040 (0.426)	0.087 (0.435)	-0.002 (0.025)
Area	0.139** (0.063)	0.045 (0.040)	0.009** (0.004)	0.406*** (0.092)	0.460*** (0.093)	0.025*** (0.005)
Ports	0.201 (0.305)	0.023 (0.242)	0.026 (0.019)	0.701* (0.386)	0.337 (0.385)	0.039* (0.022)
Roaddensity	0.986 (1.021)	0.299 (0.603)	0.096 (0.066)	1.315 (1.538)	2.521 (1.565)	0.091 (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.

region fixed effects) where we replace $Birthregion_{ict}$ by $Ethnicregion_{ict}$. 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.

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

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 (0.387)	-0.064 (0.273)	0.032 (0.025)	0.212 (0.381)	0.299 (0.365)	0.016 (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 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."

⁵²These 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.

⁵³We 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 the allocation equation above.⁵⁶ To

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.

⁵⁶ NOAA's nighttime light data are frequently used as a proxy for subnational development (e.g., Chen and Nordhaus 2011; Henderson

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

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

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:

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

\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 switches to one if subnational region i in country c received any Chinese funding in year t .⁵⁹

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.

⁵⁷We 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).

⁵⁸There 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.

⁵⁹To 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

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

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

statistics are lower. Table E.1 shows these results.

⁶⁰Economic 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.

⁶¹In 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.”

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

⁶³Indeed, China EXIM Bank specifies that, with respect to the concessional loans that it authorizes, “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).

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).

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

⁶⁴We 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).

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

Table 9. Aid effectiveness estimates ADM1

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

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 nighttime 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

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

⁶⁶Dreher 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 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).

Table 10. Aid effectiveness estimates ADM2

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

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

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

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

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

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 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 nighttime 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.

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	Ouhritenga	Ziniare	Mossi
Burundi	Pierre Buyoya	25.07.1996	30.04.2003	Bururi	Rutovu	Tutsi
Burundi	Pierre Nkurunziza	26.08.2006	ongoing	Bujumbura Mairie	Rohereero	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		Portuguese
Cape Verde	Carlos Veiga	04.04.1991	29.07.2000	São Vicente		Portuguese
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	Ikilou Dhoinine	26.02.2011	ongoing	Nzwani		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 con-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 Chiwalolo	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	Kébémér	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'alín
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

Appendix B. Additional Maps

Figure B.1: Subnational boundaries

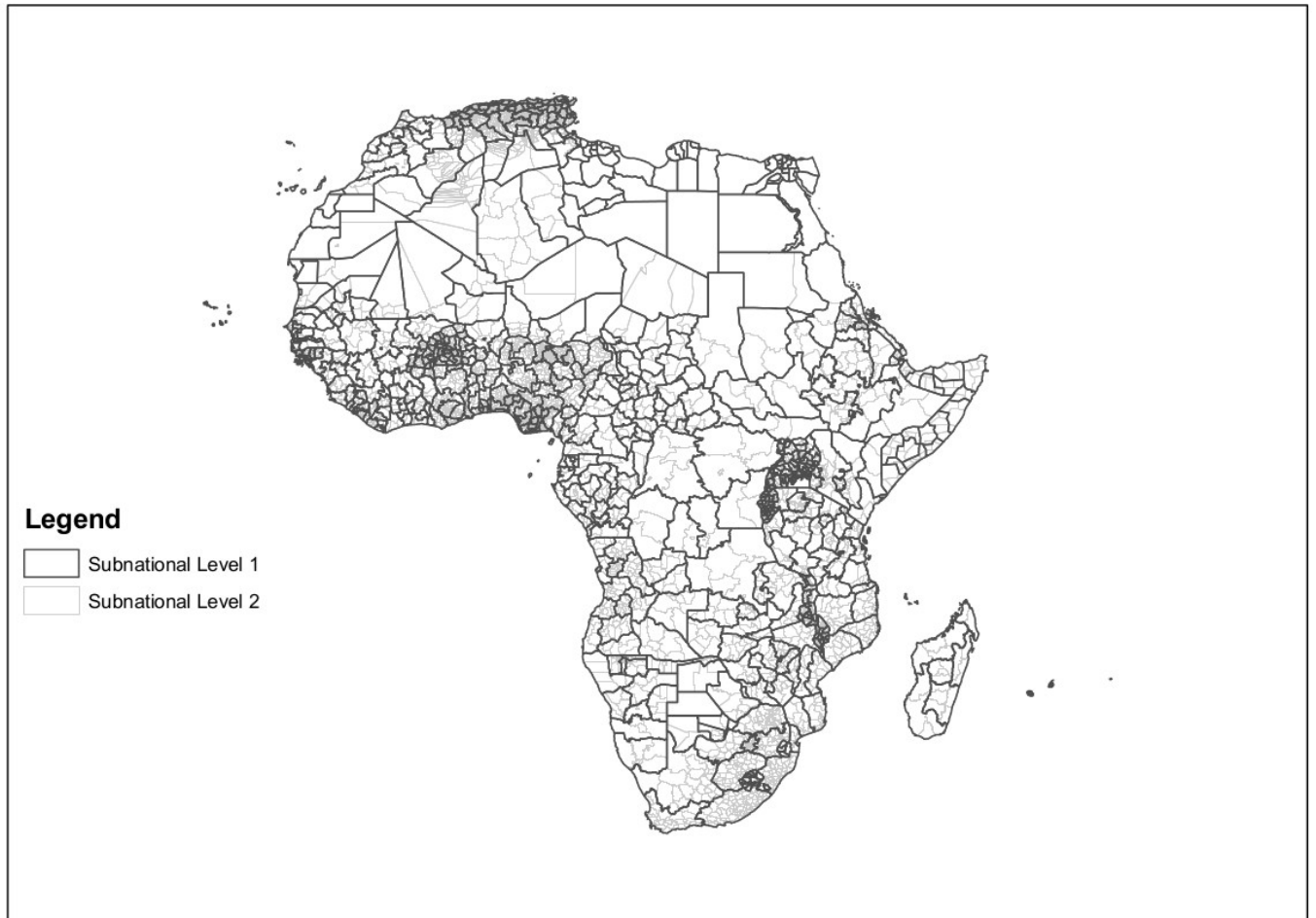


Figure B.2: China's aid projects per subnational unit in Africa (total number of projects, 2000–11, ADM1)

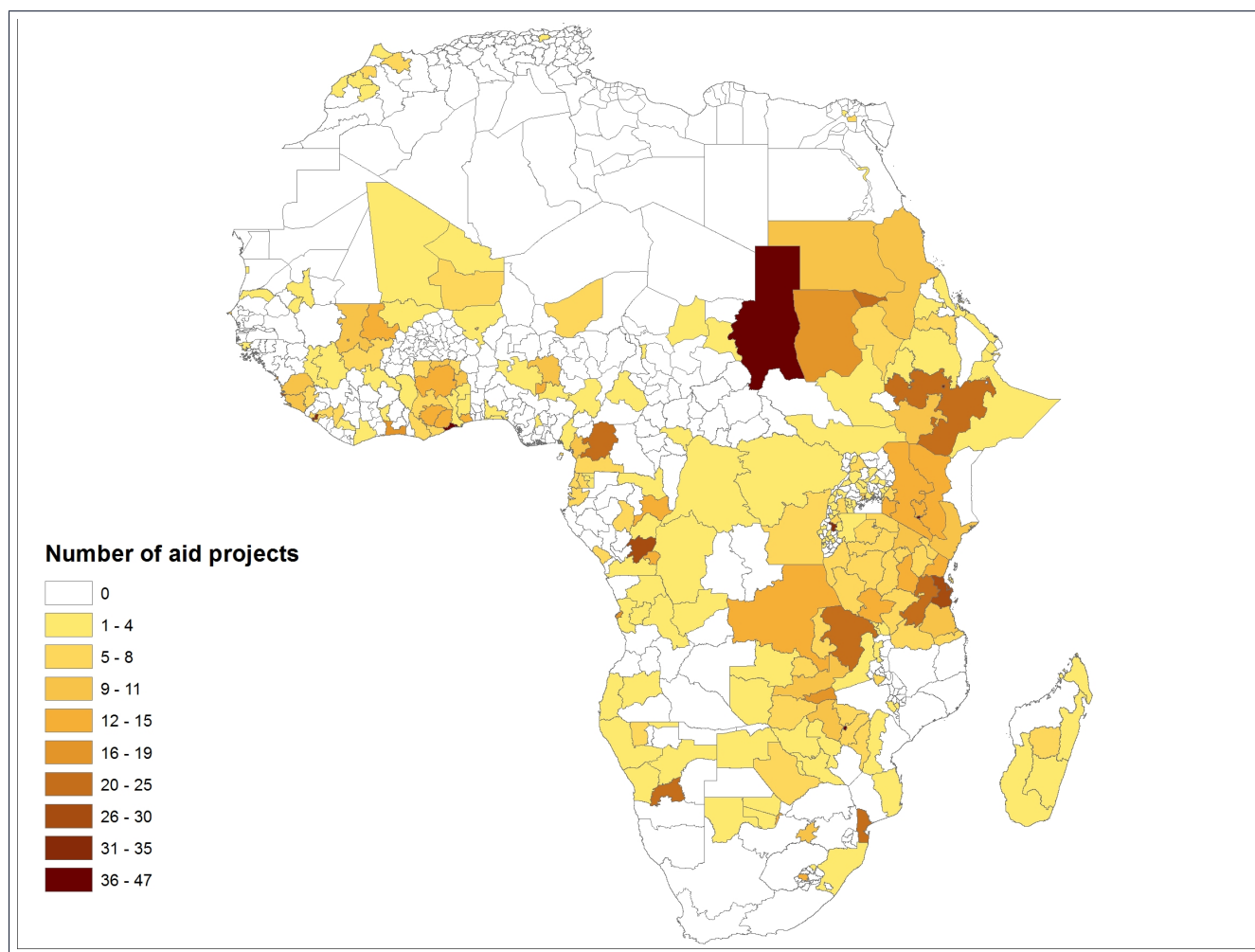


Figure B.3: Value of World Bank aid projects per subnational unit in Africa (total value in million 2009 US\$, 2000–11, ADM1)

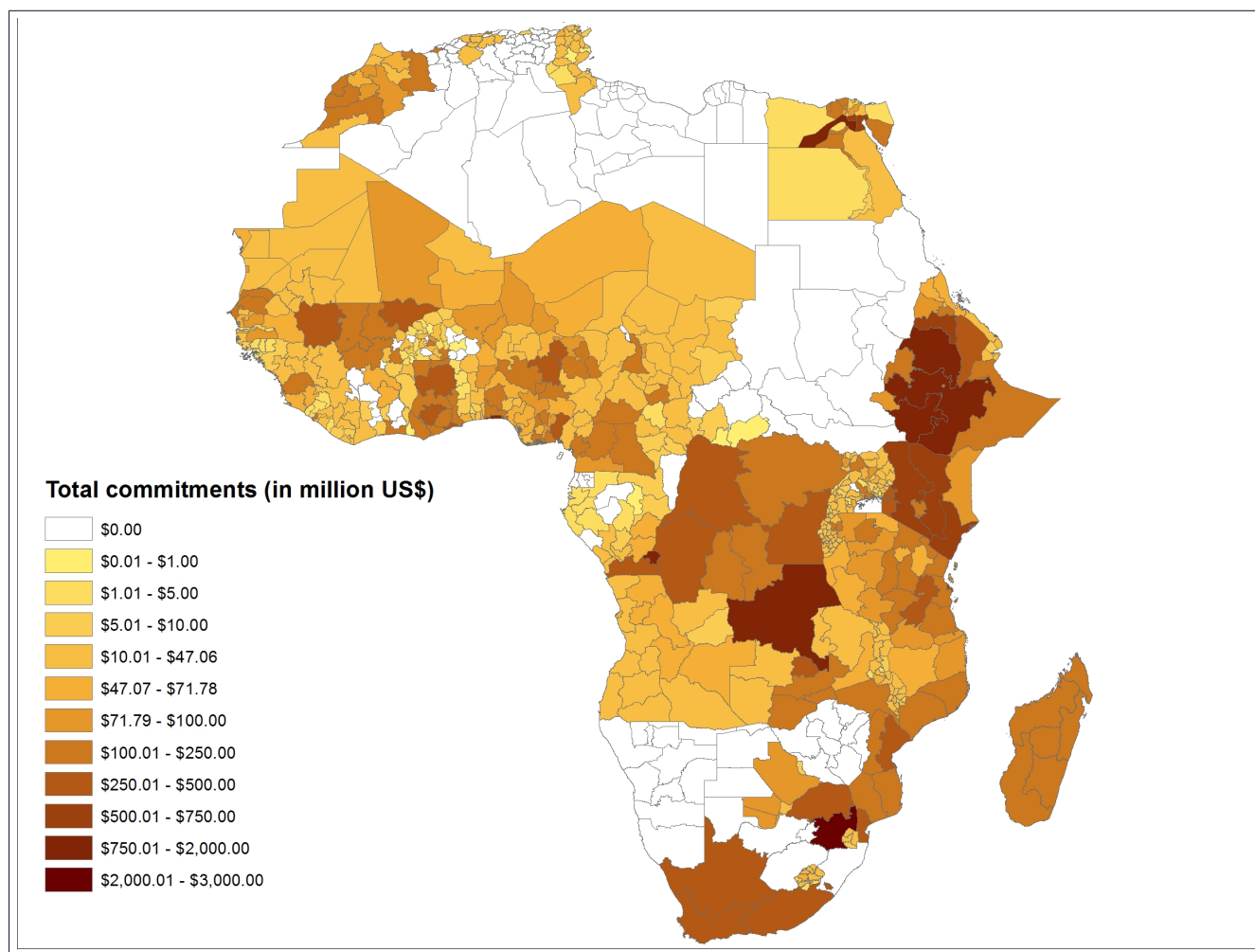
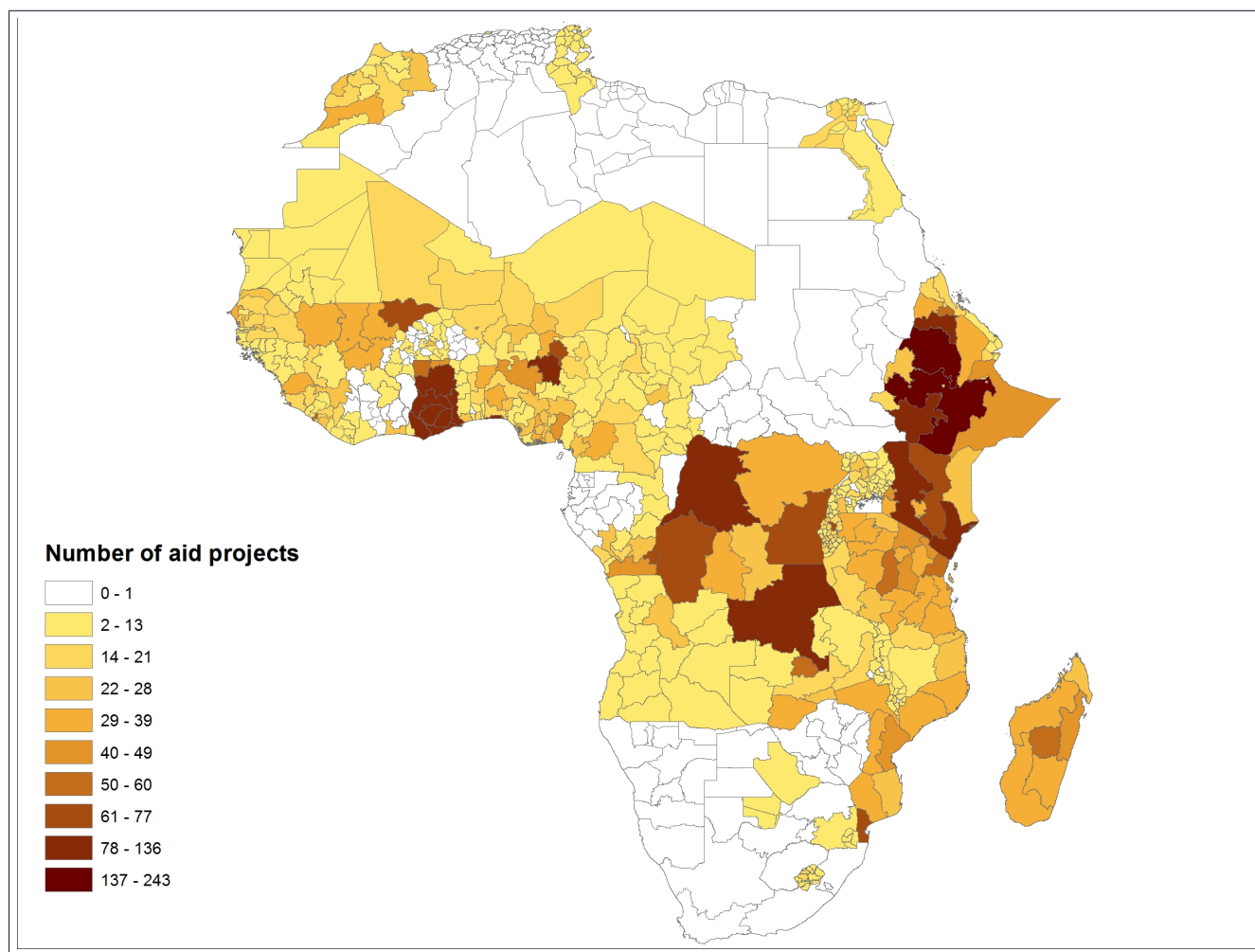


Figure B.4: World Bank aid projects per subnational unit in Africa (total number of projects, 2000–11, ADM1)



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** (0.272)	0.307 (0.248)	0.275* (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

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

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*** (0.364)	0.084* (0.047)
Birthregion spouse	1.020* (0.521)	0.102* (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

Units of obs.	(1) ADM2	(2) ADM2	(3) ADM2	(4) ADM2	(5) ADM2	(6) 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** (0.252)	0.392* (0.204)	0.036** -0.016	0.277 (0.257)	0.281 (0.221)	-0.004 -0.018
Light2000	0.060*** (0.018)	0.038** (0.015)	0.005*** -0.001			
Population2000	0.028* (0.014)	0.008 (0.009)	0.002** -0.001			
Capitalregion	4.625*** (0.527)	3.229*** (0.430)	0.323*** -0.032			
Mines	0.020 (0.027)	-0.001 (0.013)	0.002 -0.002			
Oilgas	-0.053 (0.036)	-0.039 (0.026)	-0.004* -0.002			
Area	0.039*** (0.013)	0.023** (0.009)	0.003*** -0.001			
Ports	0.158* (0.087)	0.038 (0.059)	0.012** -0.006			
Roaddensity	0.360 (0.219)	0.322** (0.159)	0.018 -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*** (0.400)	0.139** (0.056)	0.592* (0.303)	0.074** (0.036)	0.039 (0.024)	0.003 (0.004)
Prebirth	0.428 (0.900)	0.022 (0.092)	-0.773 (0.557)	-0.063 (0.057)	0.037 (0.059)	0.000 (0.007)
Postbirth (1 year)	1.395 (0.853)	0.201 (0.132)	0.835 (0.757)	0.105 (0.080)	0.033 (0.053)	0.014 (0.013)
Postbirth (2 years)	-0.478 (0.502)	0.050 (0.101)	-0.006 (0.613)	0.092 (0.097)	-0.044 (0.056)	-0.006 (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
<i>Panel A. ADM1 - 2SLS estimates</i>			
$Aidpc_{ict-\tau}$	0.0375 (0.113)	0.0391 (0.0887)	0.0476 (0.0879)
Other controls	Yes	Yes	Yes
F-stat $Aidpc$	6.40	6.31	5.99
Observations	8,671	8,004	7,337
<i>Panel B. ADM2 - 2SLS estimates</i>			
$Aidpc_{ict-\tau}$	0.2850** (0.1240)	0.3110* (0.160)	0.3320** (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
<i>Panel A. ADM1 Estimates</i>			
$\bar{A}_{ic} \times Steel_{t-\tau}$	0.0006 (0.0005)	0.0008 (0.0005)	0.0010** (0.0004)
Observations	9,217	8,508	7,799
<i>Panel B. ADM2 Estimates</i>			
$\bar{A}_{ic} \times Steel_{t-\tau}$	0.0015** (0.0006)	0.0019*** (0.0006)	0.0023*** (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
<i>Panel A. ADM1 - OLS estimates</i>			
$Aidpc_{ict-\tau}$	0.0046 (0.0034)	0.0001 (0.0018)	0.0034 (0.0021)
$Aidpc_{ict-\tau}$ $\times Birthregion_{ict-\tau}$	-0.0014 (0.0058)	0.0055 (0.0069)	0.0076 (0.0055)
$Birthregion_{ict-\tau}$	0.0011 (0.0293)	0.0259 (0.0327)	0.0365 (0.0287)
Other controls	Yes	Yes	Yes
Observations	9,217	8,508	7,799
<i>Panel B. ADM1 - 2SLS estimates</i>			
$Aidpc_{ict-\tau}$	0.0540 (0.0374)	0.0580 (0.0400)	0.0778** (0.0387)
$Aidpc_{ict-\tau}$ $\times Birthregion_{ict-\tau}$	0.00588 (0.0465)	0.00784 (0.0681)	0.0208 (0.0692)
$Birthregion_{ict-\tau}$	-0.0125 (0.0459)	0.0157 (0.0562)	0.0262 (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
<i>Panel A. OLS Estimates</i>			
$Aidpc_{ict-\tau}$	0.0045* (0.0024)	0.0043* (0.0024)	0.0086** (0.0037)
$Aidpc_{ict-\tau}$ $\times Birthregion_{ict-\tau}$	0.0021 (0.0049)	0.0061 (0.0064)	0.0053 (0.0056)
$Birthregion_{ict-\tau}$	-0.0202*** (0.0074)	-0.0263*** (0.0097)	-0.0200** (0.0088)
<i>Panel B. 2SLS Estimates</i>			
$Aidpc_{ict-\tau}$	0.0574 (0.0362)	0.0729* (0.0421)	0.0960*** (0.0317)
$Aidpc_{ict-\tau}$ $\times Birthregion_{ict-\tau}$	-0.0036 (0.0278)	0.0303 (0.0291)	0.0580 (0.0405)
$Birthregion_{ict-\tau}$	-0.0212*** (0.0078)	-0.0292*** (0.0101)	-0.0241** (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
<i>Panel A. OLS Estimates</i>		
$Aidpc_{ict-1}$	0.0070** (0.0032)	0.0145** (0.0065)
Observations	2,836	23,084
<i>Panel B. First Stage Estimates</i>		
$\bar{A}_{ic} \times Steel_{t-1}$	0.0227*** (0.0048)	0.0353*** (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
<i>Panel C. 2SLS Estimates 1</i>		
$Aidpc_{ict-1}$	0.0688** (0.0282)	0.0762*** (0.0157)
Observations	2,836	23,084
F-stat $Aidpc$	9.06	23.39
<i>Panel D. 2SLS Estimates 2</i>		
$Aidpc_{ict-1}$	0.0630** (0.0245)	0.0593*** (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.

References

- Acemoglu, Daron, and James Robinson. 2012. Fancy Schools. Why Nations Fail Blog. February 27, 2012. Available at <http://whynationsfail.com/blog/2012/2/27/fancy-schools.html> (last accessed 24 February 2015).
- African Development Bank (AfDB), Organisation for Economic Co-operation and Development (OECD), United Nations Development Programme (UNDP), and United Nations Economic Commission for Africa (UNECA). 2011. African Economic Outlook 2011. Tunis, Tunisia: AfDB. Available at http://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Media_Embargoed_Content/EN-AEO_2011_embargo%206%20Juin.pdf (accessed 1 November 2014).
- Ahlerup, Pelle, and Ann-Sofie Isaksson. 2015. Ethno-Regional Favouritism in Sub-Saharan Africa. *Kyklos* 68, 2: 143-152.
- Ahlerup, Pelle, Thushyanthan Baskaran, and Arne Bigsten. Forthcoming. Regional Development and National Identity in Sub-Saharan Africa. *Journal of Comparative Economics*. <http://dx.doi.org/10.1016/j.jce.2016.02.001>.
- AidData. 2015. Geocoded Data from the World Bank IBRD-IDA, Version 1.0. Available at <http://aiddata.org> (accessed 14 January 2015).
- Alesina, Alberto, and David Dollar. 2000. Who Gives Foreign Aid to Whom and Why? *Journal of Economic Growth* 5, 1: 33-63.
- Bader, Julia. 2015. China, Autocratic Patron? An Empirical Investigation of China as a Factor in Autocratic Survival. *International Studies Quarterly* 59, 2: 23-33.
- Barkan, Joel D., and Michael Chege. 1989. Decentralising the State: District Focus and the Politics of Reallocation in Kenya. *Journal of Modern African Studies* 27, 3: 431-453.
- Bartke, Wolfgang. 1989. *The Economic Aid of the PR China to Developing and Socialist Countries* (2nd ed.). Munich, Germany: K. G. Saur.
- Bates, Robert H. 1974. Ethnic Competition and Modernization in Contemporary Africa. *Comparative Political Studies* 6, 4: 457-484.
- Bourguignon, François, and Jean-Philippe Platteau. 2014. The Hard Challenge of Aid Coordination. *World*

Development 69: 86-97.

Bräutigam, Deborah. 2009. *The Dragon's Gift: The Real Story of China in Africa*. Oxford, UK: Oxford University Press.

Bräutigam, Deborah. 2011a. Aid 'With Chinese Characteristics': Chinese Foreign Aid and Development Finance Meet the OECD-DAC Aid Regime. *Journal of International Development* 23, 5: 752-764.

Bräutigam, Deborah. 2011b. Testimony on China's Growing Role in Africa before the United States Senate Committee on Foreign Relations Subcommittee on African Affairs. November 1, 2011. Available at http://www.foreign.senate.gov/imo/media/doc/Deborah_Brautigam_Testimony.pdf (last accessed 24 February 2015).

Briggs, Ryan C. 2014. Aiding and Abetting: Project Aid and Ethnic Politics in Kenya. *World Development* 64: 194-205.

Brückner, Markus. 2013. On the Simultaneity Problem in the Aid and Growth Debate. *Journal of Applied Econometrics* 28, 1: 126-150.

Bueno de Mesquita, Bruce, and Alastair Smith. 2007. Foreign Aid and Policy Concessions. *Journal of Conflict Resolution* 51, 2: 251-284.

Bulman, David, Walter Kolkma, and Aart Kraay. Forthcoming. Good Countries or Good Projects? Comparing Macro and Micro Correlates of World Bank and Asian Development Bank Project Performance. *Review of International Organizations*.

Bun, Maurice, and Teresa Harrison. 2014. OLS and IV Estimation of Regression Models Including Endogenous Interaction Terms. UvA-Econometrics Working Paper No. 2014-02. Amsterdam, Netherlands: University of Amsterdam.

Burgess, Robin, Remi Jedwab, Edward Miguel, Ameet Morjaria, and Gerard Padró i Miquel. 2015. The Value of Democracy: Evidence from Road Building in Kenya. *American Economic Review* 105, 6: 1817-1851.

Center for International Earth Science Information Network (CIESIN). 2013. Global Roads Open Access Data Set, Version 1 (gROADSv1). Columbia University, and Information Technology Outreach Services—ITOS—University of Georgia. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC). Available at <http://dx.doi.org/10.7927/H4VD6WCT>.

Chen, Chuan, and Ryan Orr. 2009. Chinese Contractors in Africa: Home Government Support, Coordination Mechanisms, and Market Entry Strategies. *Journal of Construction Engineering and Management* 1135,

11: 1201-1210.

- Chen, Xi, and William D. Nordhaus. 2011. Using Luminosity Data as a Proxy for Economic Statistics. *Proceedings of the National Academy of Sciences* 108, 21: 8589-8594.
- Clemens, Michael A., Steven Radelet, Rikhil R. Bhavnani, and Samuel Bazzi. 2012. Counting Chickens when they Hatch: Timing and the Effects of Aid on Growth. *Economic Journal* 122, 561: 590-617.
- Cogneau, Denis, and Yannick Dupraz. 2014. Questionable Inference on the Power of Pre-Colonial Institutions in Africa. PSE Working Paper 25. Paris: Paris School of Economics (PSE).
- Cohen, John M. 1995. Ethnicity, Foreign Aid, and Economic Growth in Sub-Saharan Africa: The Case of Kenya. HIID Development Paper No. 520. Cambridge, MA: Harvard Institute for International Development.
- Copper, John F. 2016. *China's Foreign Aid and Investment Diplomacy, Volume III: Strategy Beyond Asia and Challenges to the United States and the International Order*. Basingstoke, UK: Palgrave.
- Corkin, Lucy. 2011. Redefining Foreign Policy Impulses toward Africa: The Roles of the MFA, the MOFCOM and China Exim Bank. *Journal of Current Chinese Affairs* 40, 4: 61-90.
- Davies, Martyn, Hannah Edinger, Nastasya Tay, and Sanusha Naidu. 2008. How China Delivers Development Assistance to Africa. Centre for Chinese Studies. Stellenbosch, South Africa: University of Stellenbosch.
- Deininger, Klaus, Lyn Squire, and Swati Basu. 1998. Does Economic Analysis Improve the Quality of Foreign Assistance? *World Bank Economic Review* 12, 3: 385-418.
- De Luca, Giacomo, Roland Hodler, Paul A. Raschky, and Michele Valsecchi. 2015. Ethnic Favoritism: An Axiom of Politics? CESifo Working Paper 5209. Munich, Germany: CESifo.
- Denizer, Cevdet, Daniel Kaufmann, and Aart Kraay. 2013. Good Countries or Good Projects? Macro and Micro Correlates of World Bank Project Performance. *Journal of Development Economics* 105: 288-302.
- Dietrich, Simone. 2013. Bypass or Engage? Explaining Donor Delivery Tactics in Foreign Aid Allocation. *International Studies Quarterly* 57, 4: 698-712.
- Dietrich, Simone. 2016. Donor Political Economies and the Pursuit of Aid Effectiveness. *International Organization* 70, 1: 65-102.
- Dionne, Kim Yi, Eric Kramon, and Tyson Roberts. 2013. Aid Effectiveness and Allocation: Evidence from Malawi. Paper presented at the Conference "Research Frontiers in Foreign Aid" at Princeton University,

April 26-27.

- Do, Quoc-Anh, Kieu-Trang Nguyen, and Anh N. Tran. 2013. One Mandarin Benefits the Whole Clan: Hometown Favoritism in an Authoritarian Regime. Paper presented at the 2014 Annual Congress of the European Economic Association in Toulouse, France. <http://www.eea-esem.com/files/papers/EEA-ESEM/2014/2185/Mandarin%20oct%2030%202013.pdf>.
- Dornan, Matthew, and Philippa Brant. 2014. Chinese Assistance in the Pacific: Agency, Effectiveness and the Role of Pacific Island Governments. *Asia & the Pacific Policy Studies* 1, 2: 349-363.
- Doucoulagos, Hristos, and Martin Paldam. 2009. The Aid Effectiveness Literature: The Sad Results of 40 Years of Research. *Journal of Economic Surveys* 23, 3: 433-461.
- Downs, Erica. 2011. Inside China, Inc: China Development Bank's Cross-Border Energy Deals. John L. Thornton China Center Monograph Series No. 3. Washington, DC: Brookings Institution.
- Dreher, Axel, Vera Eichenauer, and Kai Gehring. 2016. Geopolitics, Aid and Growth: The Impact of UN Security Council Membership on the Effectiveness of Aid. *World Bank Economic Review*, forthcoming. <http://dx.doi.org/10.1093/wber/lhw037>.
- Dreher, Axel, and Andreas Fuchs. 2015. Rogue Aid? An Empirical Analysis of China's Aid Allocation. *Canadian Journal of Economics* 48, 3: 988-1023.
- Dreher, Axel, Andreas Fuchs, Bradley Parks, Austin M. Strange, and Michael J. Tierney. 2015. Apples and Dragon Fruits: The Determinants of Aid and Other Forms of State Financing from China to Africa. AidData Working Paper No. 15. Williamsburg, VA: AidData.
- Dreher, Axel, Stephan Klasen, James Vreeland, and Eric Werker. 2013. The Costs of Favoritism: Is Politically-driven Aid Less Effective? *Economic Development and Cultural Change* 62, 1: 157-191.
- Dreher, Axel, and Steffen Lohmann. 2015. Aid and Growth at the Regional Level. *Oxford Review of Economic Policy* 31, 3-4: 420-446.
- Dreher, Axel, Peter Nunnenkamp, and Rainer Thiele. 2011. Are 'New' Donors Different? Comparing the Allocation of Bilateral Aid Between nonDAC and DAC Donor Countries. *World Development* 39, 11: 1950-1968.
- Dreher, Axel, Jan-Egbert Sturm, and James Vreeland. 2009. Development Aid and International Politics: Does Membership on the UN Security Council Influence World Bank Decisions? *Journal of Development Economics* 88, 1: 1-18.

- Dreher, Axel, and Shu Yu. 2016. The Alma Mater Effect. Does Foreign Education of Political Leaders Influence Foreign Policy? CEPR Discussion Paper No. 11450.
- Easterly, William, and Tobias Pfutze. 2008. Where Does the Money Go? Best and Worst Practices in Foreign Aid. *Journal of Economic Perspectives* 22, 2: 29-52.
- Faust, Jörg. 2010. Policy Experiments, Democratic Ownership and Development Assistance. *Development Policy Review* 28, 5: 515-534.
- Faye, Michael, and Paul Niehaus. 2012. Political Aid Cycles. *American Economic Review* 102, 7: 3516-3530.
- Findley, Michael. G., Josh Powell, Daniel Strandow, and Jeff Tanner. 2011. The Localized Geography of Foreign Aid: A New Dataset and Application to Violent Armed Conflict. *World Development* 39, 11: 1995-2009.
- Foster, Vivien, William Butterfield, Chuan Chen, and Nataliya Pushak. 2008. Building Bridges: China's Growing Role as Infrastructure Financier for Sub-Saharan Africa. Washington, DC: World Bank/PPIAF.
- Franck, Raphaël, and Ilia Rainer. 2012. Does the Leader's Ethnicity Matter? Ethnic Favoritism, Education and Health in Sub-Saharan Africa. *American Political Science Review* 106, 2: 294-325.
- Francois, Patrick, Ilia Rainer, and Francesco Trebbi. 2015. How is Power Shared in Africa? *Econometrica* 83, 2: 465-503.
- Franken, Nathalie, Bart Minten, and Johan F.M. Swinnen. 2012. The Political Economy of Relief Aid Allocation: Evidence from Madagascar. *World Development* 40, 3: 486-500.
- Frey, Bruno S., and Friedrich Schneider. 1986. Competing Models of International Lending Activity. *Journal of Development Economics* 20, 3: 225-245.
- Giovannetti, Girogia, and Marco Sanfilippo. 2009. Do Chinese Exports Crowd-out African Goods: An Econometric Analysis by Country and Sector. *European Journal of Development Research* 21, 4: 506-530.
- Goemans, Hein E., Kristian S. Gleditsch, and Giacomo Chiozza. 2009. Introducing Archigos: A Data Set of Political Leaders. *Journal of Peace Research* 46, 2: 269-283.
- Halper, Stefan. 2010. *The Beijing Consensus: How China's Authoritarian Model Will Dominate the Twenty-first Century*. New York, NY: Basic Books.
- Hamdi, Abdelrahim. 2005. Al-waraqa al-iqtisādiyya li'l-mu'tamar alwatani al-hākim bi'l-Sudan. [The Economic

- Paper for the ruling National Congress: Future of Foreign Investment in Sudan]. Unpublished Manuscript. Khartoum, Sudan.
- Henderson, Vernon J., Adam Storeygard, and David N. Weil. 2012. Measuring Economic Growth from Outer Space. *American Economic Review* 102, 2: 994-1028.
- Hendrix, Cullen, and Marcus Noland. 2014. *Confronting the Curse: The Economics and Geopolitics of Natural Resource Governance*. Washington, DC: Peterson Institute for International Economics.
- Hernandez, Diego. 2016. Are “New” Donors Challenging World Bank Conditionality? AidData Working Paper 26. Williamsburg, VA: AidData.
- Hodler, Roland, and Paul A. Raschky. 2014a. Regional Favoritism. *Quarterly Journal of Economics* 129, 2: 995-1033.
- Hodler, Roland, and Paul A. Raschky. 2014b. Economic Shocks and Civil Conflict at the Regional Level. *Economics Letters* 124, 3: 530-533.
- Hsiang, Solomon, and Nitin Sekar. 2016. Does Legalization Reduce Black Market Activity? Evidence from a Global Ivory Experiment and Elephant Poaching Data. NBER Working Paper 22314. Cambridge, MA: NBER.
- International Crisis Group (ICG). 2012. China's New Courtship in South Sudan. Africa Report No. 186. 4 April 2012. New York, NY: ICG.
- Isaksson, Ann-Sofie, and Andreas Kotsadam. 2016. Chinese Aid and Local Corruption. Working Papers in Economics No. 667. Gothenburg, Sweden: University of Gothenburg.
- Jablonski, Ryan S. 2014. How Aid Targets Votes: The Impact of Electoral Incentives on Foreign Aid Distribution. *World Politics* 66, 2: 293-330.
- Jansson, Johanna. 2011. The Sicomines Agreement: Change and Continuity in the Democratic Republic of Congo's International Relations. South African Institute of International Affairs Occasional Paper 97. Johannesburg, South Africa: South African Institute of International Affairs.
- Jansson, Johanna. 2013. The Sicomines Agreement Revisited: Prudent Chinese Banks and Risk-taking Chinese Companies. *Review of African Political Economy* 40, 135: 152-162.
- Jenkins, Glenn P. 1997. Project Analysis and the World Bank. *American Economic Review* 87, 2: 38-42.
- Kasara, Kimuli. 2007. Tax Me if You Can: Ethnic Geography, Democracy, and the Taxation of Agriculture in

- Africa. *American Political Science Review* 101, 1: 159-172.
- Kelly, Gina, Samuel Brazys, and Johan A. Elkink. 2016. The Dragon's Curse? China, the World Bank, and Perceptions of Corruption in Tanzania. AidData Working Paper 26. Williamsburg, VA: AidData.
- Kersting, Erasmus, and Christopher Kilby. 2014. Aid and Democracy Redux. *European Economic Review* 67: 125-143.
- Kilama, Eric. 2016. Evidences on Donors Competition in Africa: Traditional Donors versus China? *Journal of International Development* 28, 4: 528-551.
- Kilby, Christopher. 2009. The Political Economy of Conditionality: An Empirical Analysis of World Bank Loan Disbursements. *Journal of Development Economics* 89, 1: 51-61.
- Knack, Stephen. 2014. Building or Bypassing Recipient Country Systems: Are Donors Defying the Paris Declaration? *Journal of Development Studies* 50, 6: 839-854.
- Koos, Carlo, and Jan Pierskalla. Forthcoming. The Effects of Oil Production and Ethnic Representation on Violent Conflict in Nigeria: A Mixed-Method Approach. *Terrorism and Political Violence*. <http://dx.doi.org/10.1080/09546553.2014.962021>.
- Kragelund, Paul. 2011. Emerging Partners and Governance: Does the Rise of Emerging Partnerships Increase Ownership of Development Policies and Widen the Policy Space for African Governments? Special African Economic Outlook 2011 Paper. Paris, France: OECD Development Centre.
- Kramon, Eric, and Daniel N. Posner. 2012. Ethnic Favoritism in Primary Education in Kenya. Mimeo.
- Kramon, Eric, and Daniel N. Posner. 2013. Who Benefits from Distributive Politics? How the Outcome One Studies Affects the Answer One Gets. *Perspectives on Politics* 11, 2: 461-474.
- Kremer, Michael, and Michael Clemens. 2016. The New Role for the World Bank. *Journal of Economic Perspectives* 30, 1: 53-76.
- Kuziemko, Ilyana, and Eric Werker. 2006. How Much Is a Seat on the Security Council Worth? Foreign Aid and Bribery at the United Nations. *Journal of Political Economy* 114, 5: 905-930.
- Li, Hongbin, and Li-An Zhou. 2005. Political Turnover and Economic Performance: the Incentive Role of Personnel Control in China. *Journal of Public Economics* 89, 9: 1743-1762.
- Lujala, Päivi, Jan Ketil Rød, and Nadia Thieme. 2007. Fighting over Oil: Introducing a New Dataset. *Conflict Management and Peace Science* 24, 3: 239-256.

- Maizels, Alfred, and Machiko K. Nissanke. 1984. Motivations for Aid to Developing Countries. *World Development* 12, 9: 879-900.
- Masaki, Takaaki. 2015. The Political Economy of Aid Allocation in Africa: Evidence from Zambia. AidData Working Paper No. 5. Williamsburg, VA: AidData.
- Maystadt, Jean-François, Giacomo de Luca, Petros G. Sekeris, and John Ulimwengu. 2014. Mineral Resources and Conflicts in the Democratic Republic of Congo: A Case of Ecological Fallacy. *Oxford Economic Papers* 66, 3: 721-749.
- McKinlay, Robert D., and Richard Little. 1977. A Foreign Policy Model of US Bilateral Aid Allocation. *World Politics* 30, 1: 58-86.
- Michalopoulos, Stelios, and Elias Papaioannou. 2013. Pre-Colonial Ethnic Institutions and Contemporary African Development. *Econometrica* 81, 1: 113-152.
- Michalopoulos, Stelios, and Elias Papaioannou. 2014. National Institutions and Subnational Development in Africa. *Quarterly Journal of Economics* 129, 1: 151-213.
- Ministry of Commerce (MOFCOM). 2014. Measures for the Administration of Foreign Aid. 15 December 2014. Beijing, China: Ministry of Commerce. Available at <http://www.mofcom.gov.cn/article/b/c/201411/20141100799438.shtml>.
- Moser, Christine. 2008. Poverty Reduction, Patronage or Vote Buying? The Allocation of Public Goods and the 2001 Election in Madagascar. *Economic Development and Cultural Change* 57, 1: 137-162.
- Moss, Todd, Gunilla Pettersson, and Nicolas van de Walle. 2007. An Aid-Institutions Paradox? A Review Essay on Aid Dependency and State Building in Sub-Saharan Africa, in: *Reinventing Foreign Aid*, edited by William Easterly, 255-281. Cambridge, UK: MIT Press.
- Mthembu-Salter, Gregory. 2012. Goodwill and Hard Bargains: The DRC, China and India. SAIIA Occasional Paper 114. Johannesburg, South Africa: South African Institute of International Affairs.
- Mu, Ren, and Xiaobo Zhang. 2014. Do Elected Leaders in a Limited Democracy Have Real Power? Evidence from Rural China. *Journal of Development Economics* 107, C: 17-27.
- Naím, Moisés. 2007. Rogue Aid. *Foreign Policy*. 14 February 2007.
- National Geospatial-Intelligence Agency (NGA). 2011. World Port Index (Pub 150). Springfield, VA: National Geospatial-Intelligence Agency. Available at <http://msi.nga.mil/NGAPortal>.

- National Oceanic and Atmospheric Administration (NOAA). 2014. *Version 4 DMSP-OLS Nighttime Lights Time Series*. Boulder, CO: National Geophysical Data Center. Accessed 05 April 2014.
- Nissanke, Machiko, and Marie Söderberg. 2011. The Changing Landscape in Aid Relationships in Africa: Can China's Engagement Make a Difference to African Development. UI paper series 2011/2. Stockholm, Sweden: Swedish Institute for International Affairs.
- Nizalova, Olena, and Irina Murtazashvili. 2016. Exogenous Treatment and Endogenous Factors: Vanishing of Omitted Variable Bias on the Interaction Term. *Journal of Econometric Methods* 5, 1: 71-77.
- Nunn, Nathan, and Nancy Qian. 2014. US Food Aid and Civil Conflict. *American Economic Review* 104, 6: 1630-1666.
- Nunnenkamp, Peter, Hannes Öhler, and Maximiliano Sosa Andrés. Forthcoming. Need, Merit and Politics in Multilateral Aid Allocation: A District-Level Analysis of World Bank Projects in India. *Review of Development Economics*. <http://doi.org/10.1111/rode.12259>.
- OECD. 2015. Making Development Co-operation Fit for the Future: A Survey of Partner Countries. OECD Development Co-operation Working Paper No. 20. Paris, France: OECD. Available at <http://dx.doi.org/10.1787/5js6b25hzv7h-en>.
- Öhler, Hannes, and Peter Nunnenkamp. 2014. Needs-based Targeting or Favoritism? The Regional Allocation of Multilateral Aid Within Recipient Countries. *Kyklos* 67, 3: 420-446.
- Parks, Bradley C. 2014. *Brokering Development Policy Change: The Parallel Pursuit of Millennium Challenge Account Resources and Reform*. Ph.D. Dissertation. London, UK: London School of Economics and Political Science.
- Powell, Joshua, and Michael G. Findley. 2012. The Swarm Principle? A Sub-national Spatial Analysis of Donor Coordination in Sub-Saharan Africa. Available at http://www.michael-findley.com/uploads/2/0/4/5/20455799/swarm_principle_coordination_may2013.pdf.
- Rajan, Raghuram G., and Arvind Subramanian. 2008. Aid and Growth: What Does the Cross-Country Evidence Really Show? *Review of Economics and Statistics* 90, 4: 643-665.
- Ravallion, Martin. 2009. Are There Lessons for Africa from China's Success Against Poverty? *World Development* 37, 2: 303-313.
- Reisen, Helmut, and Jean-Philippe Stijns. 2011. Emerging Partners Create Policy Space for Africa. VoxEU.org. Available at <http://www.voxeu.org/article/how-emerging-donors-are-creating->

policy-space-africa (accessed 01 November 2014).

Roessler, Phillip. 2013. Chinese Development Finance and Strategies of Political (and Territorial Survival in Sudan. 3 May 2013. *The First Tranche*. Available at <http://aiddata.org/blog/chinese-development-finance-and-strategies-of-political-and-territorial-survival-in-sudan> (accessed 27 August 2016).

Roodman, David. 2015. A Replication of “Counting Chickens when They Hatch” (Economic Journal 2012). *Public Finance Review* 43, 2: 256-281.

Spegele, Brian, and John W. Miller. 2016. China Continues to Prop Up Its Ailing Factories, Adding to Global Glut. *Wall Street Journal*. 9 May 2016.

State Council. 2014. China’s Foreign Aid. Beijing, China: Information Office of the State Council. Available at http://news.xinhuanet.com/english/china/2014-07/10/c_133474011.htm (accessed 01 November 2014).

Strandow, Daniel, Michael Findley, Daniel Nielson, and Josh Powell. 2011. The UCDP-AidData Codebook on Geo-referencing Foreign Aid. Version 1.1. Uppsala Conflict Data Program. Uppsala, Sweden: Uppsala University.

Strange, Austin M., Axel Dreher, Andreas Fuchs, Bradley Parks, and Michael J. Tierney. Forthcoming. Tracking Under-Reported Financial Flows: China’s Development Finance and the Aid-Conflict Nexus Revisited. *Journal of Conflict Resolution*. doi.org/10.1177/0022002715604363.

Strange, Austin M., Brian O’Donnell, Daniel Gamboa, Bradley Parks, and Charles Perla. 2014. AidData’s Methodology for Tracking Under-Reported Financial Flows. Williamsburg, VA: AidData.

Stratfor. 2016. The Story of Steel in China. Available at <https://www.stratfor.com/analysis/story-steel-china>.

Tull, Denis M. 2006. China’s Engagement in Africa: Scope, Significance and Consequences. *Journal of Modern African Studies* 44, 3: 459-479.

United Nations Conference on Trade and Development (UNCTAD) 2015. *World Investment Report 2015*. United Nations, Geneva, Switzerland.

U.S. Geological Survey (USGS). 2005. Mineral Resources Data System: U.S. Geological Survey, Reston, VA.

van de Sijpe, Nicolas. 2013. Is Foreign Aid Fungible? Evidence from the Education and Health Sectors.

- World Bank Economic Review* 27, 2: 320-356.
- Verhoeven, Harry. 2015. *Water, Civilisation and Power in Sudan*. Cambridge, UK: Cambridge University Press.
- van de Walle, Dominique, and Ren Mu. 2007. Fungibility and the Flypaper Effect of Project Aid: Micro-Evidence for Vietnam. *Journal of Development Economics* 84, 2: 667-685.
- Weidmann, Nils B., Jan Ketil Rød, and Lars-Erik Cederman. 2010. Representing Ethnic Groups in Space: A New Dataset. *Journal of Peace Research* 47, 4: 491-499.
- Werker, Eric D., Faisal Z. Ahmed, and Charles Cohen. 2009. How Is Foreign Aid Spent? Evidence from a Natural Experiment. *American Economic Journal: Macroeconomics* 1, 2: 225-244.
- Werker, Eric D. 2012. The Political Economy of Bilateral Foreign Aid. In: *Handbook of Safeguarding Global Financial Stability: Political, Social, Cultural, and Economic Theories and Models*, edited by G. Caprio, 47-58. Academic Press.
- World Steel Association. 2010. *Statistical Yearbook 2010*. Brussels, Belgium: Worldsteel Committee on Economic Studies.
- World Steel Association. 2014. *Statistical Yearbook 2014*. Brussels, Belgium: Worldsteel Committee on Economic Studies.
- Wright, Joseph. 2010. Aid Effectiveness and the Politics of Personalism. *Comparative Political Studies* 43, 6: 735-762.
- Zheng, Jinghai, Arne Bigsten, and Angang Hu. 2009. Can China's Growth be Sustained? A Productivity Perspective. *World Development* 37, 4: 874-888.