

China's Development Finance to Africa: A Media-Based Approach to Data Collection

Austin Strange, Bradley Parks, Michael J. Tierney, Andreas Fuchs, Axel Dreher, and Vijaya Ramachandran

Abstract

How big is China's aid to Africa? Does it complement or undermine the efforts of traditional donors? China releases little information, and outside estimates of the size and nature of Chinese aid vary widely. In an effort to overcome this problem, AidData, based at the College of William and Mary, has compiled a database of thousands of media reports on Chinese-backed projects in Africa from 2000 to 2011. The database includes information on 1,673 projects in 50 African countries and on \$75 billion in commitments of official finance. This paper describes the new database methodology, key findings, and possible applications of the data, which is being made publicly available for the first time. The paper and database offer a new tool set for researchers, policymakers, journalists, and civil-society organizations working to understand China's growing role in Africa. The paper also discusses the challenges of quantifying Chinese development activities, introduces AidData's Media-Based Data Collection (MBDC) methodology, provides an overview of Chinese development finance in Africa as tracked by this new database, and discusses the potential and limitations of MBDC as a resource for tracking development finance.

This working paper accompanies the release of AidData's Chinese Official Finance to Africa Dataset, Version 1.0, available for download at <http://china.aiddata.org/datasets/1.0>, and a live, interactive database platform (at <http://china.aiddata.org>). AidData's MBDC methodology is also available for download at http://china.aiddata.org/MBDC_codebook.

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1. Introduction

Over the last decade, foreign assistance from non-Western governments has increased sharply—both in absolute terms and as a share of global development finance (Klein and Harford 2005; Manning 2006; IDA 2008; Woods 2008; Fengler and Kharas 2010; Severino and Ray 2010; Dreher et al. 2011; Walz and Ramachandran 2011; Fuchs and Vadlamannati 2013; Dreher et al. forthcoming). At the same time, aid from Western governments has declined for both of the past two years (OECD 2013). This emerging “Aid 2.0” (The Economist 2011a) poses a challenge to the existing aid regime that is organized around the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD).¹ Increasing donor competition grants developing countries the opportunity to “shop around” for the types of development finance that best suit their interests (Brainard and Chollet 2007; Dreher et al. forthcoming). The rapid increase in development finance from governments that do not report to the DAC also raises a set of vexing questions for scholars and policymakers. How much funding do these non-DAC donors provide, to whom and on what terms? What impact do non-DAC sources of finance have on economic development, democratization, debt sustainability, and environmental outcomes in developing countries? China, Russia, Venezuela, and India are thought to provide billions of dollars in assistance every year (Walz and Ramachandran 2011), but most of these “new” suppliers of development finance have chosen not to participate in existing reporting systems, such as the OECD’s Creditor Reporting System (CRS) or the International Aid Transparency Initiative (IATI).²

At the 2011 High Level Forum on Aid Effectiveness in Busan, South Korea, negotiations quickly split along DAC and non-DAC lines. Member states of the DAC argued that new players, such as China, Brazil, and India, should adopt measurable, time-bound aid transparency and effectiveness commitments. Non-DAC suppliers of development finance bristled at this suggestion, arguing that their “South-South cooperation” activities are qualitatively different from Western aid and should not be governed by traditional aid principles (Fraeters 2011; Tran 2012). China, now a leading provider of global development finance, adopted a particularly strong position at Busan. Their negotiators argued that the “principle of transparency should apply to north-south cooperation, but ... it should not be seen as a standard for south-south cooperation” (Tran 2011). Ultimately, Busan resulted in a rather tenuous agreement: The majority of DAC members reaffirmed the importance of complying with IATI standards as well as the aid effectiveness standards established at Paris (2005) and Accra (2008); many non-members of the DAC agreed to a set of voluntary

¹ With the addition of Iceland in March 2013, the DAC now consists of the European Union and 24 member states of the OECD.

² There are widely varying levels of commitment to transparency among non-DAC suppliers of development finance. For example, Brazil, India, South Africa, and many of the new Eastern and Central European donors have demonstrated a higher level of interest in data disclosure and/or compliance with international reporting standards (Aufrecht et al. 2012; Sinha and Hubbard 2012). Russia has started recently to provide bilateral aid data to the CRS.

standards, but doubled down on their position that South-South cooperation should not be subject to the same set of expectations as Western aid (Barder 2011).

China is of particular interest to researchers and practitioners because of the perceived scale and opaqueness of its activities in developing countries. Beijing discloses very little official information about its development finance activities, and there is a general lack of knowledge about the cross-national, sub-national, and sectoral distribution and impact of Chinese development finance. China's overseas activities are closely scrutinized by international media, research institutions, and donor agencies, yet much of the conventional wisdom about Chinese development finance rests on untested assumptions, individual case studies, and incomplete data sources. The Chinese authorities have taken some modest steps to make their development finance activities more transparent in recent years.³ However, official sources do not cover most of Chinese development finance activities; nor do they consistently specify financial amounts or forms of support at the project level.

To address this critical information gap, AidData launched an initiative in January 2012 to (a) systematize a media-based methodology for collecting project-level development finance information; and (b) create a comprehensive database of Chinese development finance flows to Africa from 2000-2011. In addition to providing aggregate statistics, AidData's database allows users to filter Chinese development finance by country, region, year, sector, dollar amount, financing instrument, project status, and a multitude of other variables.

This paper is structured as follows. To begin this paper we provide a general overview of Chinese development finance, briefly surveying the history of Chinese aid activities as well as the institutional structure of contemporary Chinese development finance. We then present some of the most important policy debates surrounding China's activities in Africa and outline why better data is urgently needed to inform scholars and policymakers. Next, we provide an overview of previous attempts to measure Chinese development finance and identify some of the key factors that have impeded efforts to create accurate, detailed, and comprehensive data. Subsequently, we introduce AidData's media-based methodology and present the new database of Chinese overseas development finance activities. Specifically, we provide an overview of Chinese development finance to Africa as tracked by this new database. We also show that a media-based data collection methodology is a viable way to gather project-level development finance information from governments—such as China and Venezuela—that are unwilling to disclose their data. However, we are cognizant of the limitations imposed by this media-based approach and we discuss these weaknesses in the concluding section of the paper.

³ The State Council's release of the inaugural "White Paper on China's Foreign Aid" in April 2011 is one of several encouraging developments in this regard (PRC 2011). The establishment of the DAC-China Study Group also represents an effort to increase mutual understanding and cooperation through dialogue and information sharing.

2. A Long Tradition of Chinese Aid Giving

The People's Republic of China (PRC) has administered foreign assistance programs for more than 60 years.⁴ China began making ad-hoc transfers of goods to Pyongyang after the Korean War, while at the same time providing development finance to socialist countries along its border (Shen and Xia 2012). Egypt was the first African recipient of development finance in 1956, and the Chinese became increasingly involved on the continent as African nations won their independence. Development finance was initially given to support socialist leaders in Ghana and Mali, but later expanded to advance more direct political goals such as convincing these new nations to recognize Beijing instead of Taipei. The Chinese Prime Minister Zhou Enlai introduced in 1964 the 'Eight Principles of Economic and Technical Assistance' (经济技术援助的八项原则). These principles include, among other things, mutual benefit, respect for sovereignty, and helping aid recipients become more self-sufficient. During the Cold War, China also expanded its involvement on the African continent to counter the influence of the United States and particularly the Soviet Union (Bräutigam 2009; Ojokorotu and Whetho 2008). By 1973, China was giving development finance to 30 African nations, and giving more than the Soviet Union in all African countries, except eight strategic Soviet allies. This increased spending contributed to diplomatic recognition from new African nations; in 1971 the PRC replaced Taiwan as the government authorized to represent China in the United Nations. In subsequent decades China provided development finance to every African country except the few that decided to align with Taiwan.

The quantity of Chinese official finance contracted after 1973 as a response to power shifts in Chinese leadership (Dreher and Fuchs 2012). Yet Beijing's influence on the continent persisted and its focus shifted to the maintenance of earlier development finance projects. Under Deng Xiaoping's leadership in the late 1970s and 1980s, the Chinese economy opened to foreign investment and trade. This led to an increased emphasis on projects for mutual benefit and at the intersection of aid, trade, and investment (He 2006). The Chinese made extensive use of the resource-credit swap model where loans were repaid in local products and primary goods, from cattle hides in Mali to cotton in Egypt and copper in Zambia, learning from Japan's experience of supplying loans to China itself for shipments of coal and oil. This model would become increasingly important as China sought access to key natural resources from petroleum to minerals. Aid and investment intertwined as well; by 1979 Chinese companies were legally permitted to take business overseas, allowing them to bid on international jobs including projects funded by the multilateral banks.

After the Tiananmen Square demonstrations in 1989, a key driver of development finance allocation to African governments focused on political recognition of the PRC (Taylor

⁴ This summary of the history of China's aid program largely draws on Bräutigam (1998, 2009, 2010) and Dreher and Fuchs (2012). See also Kobayashi (2008) for a good overview on the history of China's aid engagement.

2009). In an aid reform in 1995, China's traditional aid instruments, grants and interest-free loans, were complemented by multiple new financing mechanisms. Chinese development finance and investment on the African continent has grown substantially since the turn of the century. Beijing and 44 African governments launched a "strategic partnership" under the auspices of the Forum on China-Africa Cooperation (FOCAC) in 2000. Pledges of assistance from China to Africa have doubled at each FOCAC summit: in 2006, US\$ 5 billion was pledged; in 2009, US\$ 10 billion; and, in 2012, US\$ 20 billion. The Chinese State Council's release of a "White Paper on China's Foreign Aid" in April 2011 also represented a major step forward for Beijing, as it officially classified some of the government's outgoing financial flows as "foreign aid" (PRC 2011).

While Chinese leaders have successively provided guidelines for Chinese foreign aid, the original principles set forth by Zhou Enlai in 1964 continue to serve as the ideological foundations of China's development finance system. As China has rapidly expanded its global portfolio of aid and other development finance projects, the agencies responsible for administering these projects have continued to claim that these principles guide their behavior. Indeed, Chinese scholars call attention to these 'Eight Principles of Foreign Assistance' (八项原则) as the foundational building blocks of rapidly evolving 'foreign aid thought' in Beijing (对外援助思想) (Huang 2007; Chang and Li 2011). Beijing's 2011 White Paper on China's Foreign Aid reaffirms the importance of these principles (PRC 2011).

China's contemporary overseas development finance apparatus is complex and not particularly well understood (Huang 2011).⁵ This is due in large part to the fact that unlike many states, including Britain and Australia, China does not have an independent agency responsible for all forms of the country's foreign aid. A labyrinthine network of bureaucratic ministries and agencies collectively make up China's development finance apparatus. But analysts agree on several key points. First, the State Council, which is led by the Premier, plays an important role in shaping Beijing's overseas aid and investment strategy. It controls the power of the purse by determining China's annual development assistance budget, reviews grants that exceed a certain financial threshold, and sets government strategy and policy vis-à-vis "politically sensitive" aid recipients, among a number of other responsibilities (Bräutigam 2009; Christensen 2010; Mwase and Yang 2012).⁶ Second, the Ministry of Commerce (MOFCOM) handles most overseas grants and interest-free loans and has some aid policy and planning responsibilities, including coordination with China Exim Bank on

⁵ Consider the role of the Ministry of Commerce (MOFCOM). While some scholars refer to MOFCOM as "in charge of implementing ... aid policy" (Grimm et al. 2011: 7) or "[taking] the lead on China's official assistance policy" (Mwase and Yang 2012: 11), others take issue with this characterization. Hong (2008) claims that MOFCOM is not responsible for formulating or executing Chinese aid policy, but is instead a "designated central processing unit" for aid statistics. For a comprehensive look at China's multi-layered foreign aid system, see Bräutigam (2009: 107-114).

⁶ The State Council reviews all cash grants above \$1.5 million and any aid projects worth over 100 RMB (approximately US\$ 12.5 million in 2009).

concessional loans (Lancaster 2007; Chaturvedi 2008; Bräutigam 2009). MOFCOM's Department of Foreign Aid (DFA) is at the center of MOFCOM's foreign aid work. Third, China Exim Bank and the China Development Bank (CDB) provide concessional and non-concessional loans and export credits. Fourth, the Ministry of Finance (MOF) is responsible for debt relief issues and contributions to multilateral institutions. Fifth, the Ministry of Foreign Affairs (MOFA) reviews project proposals from recipient countries, coordinates with MOFCOM to set annual aid levels and work plans, and organizes Forum on China–Africa Cooperation (FOCAC) summits (Lancaster 2007; Christensen 2010).⁷ While MOFCOM, MOFA and MOF are the primary actors, Chinese development finance is administered through a multi-tiered system that includes participation from 23 government ministries and commissions as well as local, provincial and regional ministries of commerce (Huang 2007).⁸ Huang (2007) points out that China's "foreign assistance management system" (援外管理体系) has gradually taken shape with the expansion of China's overseas aid activities. Hu and Huang (2012) assert that China's current development assistance management system is inadequate and cannot satisfy the needs of China's foreign aid demands as a growing provider of development assistance worldwide. They suggest that an independent aid agency could be created directly under the State Council responsible for all of China's foreign assistance work. Shortcomings in China's foreign aid architecture are also one potential explanation why there exist no comprehensive Chinese aid statistics.

3. Big Statements Resting on Flimsy Foundations

"What we have here – in states like China, Iran, Saudi Arabia, and Venezuela – are regimes that...collectively represent a threat to healthy, sustainable development. Worse, they are effectively pricing responsible and well-meaning aid organizations out of the market in the very places where they are needed the most. If they continue to succeed in pushing their alternative development model, they will succeed in underwriting a world that is more corrupt, chaotic, and authoritarian." (Moises Naím, editor in chief, Foreign Policy, 2007)

China's development finance has come under intense scrutiny over the last decade. Western policymakers have accused China of expanding its presence in Africa for largely self-interested reasons: securing access to natural resources, subsidizing Chinese firms and exports, cementing and expanding political alliances, and pursuing global economic hegemony. Naím (2007: 95) claims that "rogue" donors like China "couldn't care less about the long-term well-being of the population of the countries they 'aid.'" During an August 2012 tour to Africa, US Secretary of State Hillary Clinton took a thinly veiled shot at China,

⁷ MOFA's influence within China's foreign aid system may be waning, and apparent power rifts exist between it and MOFCOM, which reportedly often bypasses MOFA approval at the operational level (Bräutigam 2009).

⁸ For example, the Ministry of Social Welfare oversees the implementation of humanitarian aid programs (Christensen 2010); scholarships to foreign students who study in China are handled by the China Scholarship Council (Dong and Chapman 2008); and military aid is handled by the Ministry of National Defense (Pehnelt 2007).

saying that America is committed to democracy and human rights in Africa, “even when it might be easier or more profitable to look the other way to keep the resources flowing” (Manson 2012). China’s official *People’s Daily* newspaper pushed back, countering that “China’s investment in Africa is based on respecting the will of Africa, listening to the voice of Africa and caring about the concerns of Africa, thus earning the trust of most African countries” (People’s Daily Online 2012).

African policymakers are also divided on the issue of whether, to what degree, and how Chinese development finance impacts social, economic, environmental, and government outcomes. In 2008, the then-President of Senegal, Abdoulaye Wade, penned a *Financial Times* op-ed, rebuking Western donors for their criticism of Chinese aid and investment programs: “China’s approach to our needs is simply better adapted than the slow and sometimes patronising post-colonial approach of European investors, donor organisations and non-governmental organisations. ... With direct aid, credit lines and reasonable contracts, China has helped African nations build infrastructure projects in record time—bridges, roads, schools, hospitals, dams, legislative buildings, stadiums and airports. ... I have found that a contract that would take five years to discuss, negotiate and sign with the World Bank takes three months when we have dealt with Chinese authorities. I am a firm believer in good governance and the rule of law. But when bureaucracy and senseless red tape impede our ability to act—and when poverty persists while international functionaries drag their feet—African leaders have an obligation to opt for swifter solutions” (Wade 2008).⁹ Other African officials are more skeptical. Papa Kwesi Nduom, Ghana’s former Minister of Public Sector Reform in Ghana, worries “that some governments in Africa may use Chinese money in the wrong way to avoid pressure from the West for good governance” (Swann and McQuillen 2006). At the extreme end of the spectrum is the oft-cited Zambian President Michael Sata who has referred to Chinese investors as “infesters” and threatened to deport Chinese owners accused of mistreating Zambian workers (BBC News 2011; Conway-Smith 2011).¹⁰

Adjudicating between these competing claims has proven difficult because of the absence of reliable and comprehensive data about Chinese development finance that can be used to systematically test claims and hypotheses.¹¹ While the scarcity of data has limited understanding of the causes and consequences of Chinese development finance, it has certainly not deterred scholars, policymakers, journalists, or commentators from making sweeping assessments of Chinese aid and investment practices. Some of the most commonly cited hypotheses about Chinese development finance to Africa are presented below.

⁹ Also see Kagame (2009) and Wallis (2007).

¹⁰ While claims by politicians and policy analysts are suggestive and varied, Milner et al. (2013) have conducted an actual field experiment that included 3,600 participants suggesting that in Uganda public opinion about Chinese “aid” projects is worse than opinions about U.S. or World Bank aid projects.

¹¹ One exception is the quantitative analysis in Dreher and Fuchs (2012). However, their main analysis relies on the *number* of completed projects undertaken by the Ministry of Commerce in a given year and country over the 1990-2005 period. This measure does not take account of the monetary value of the projects undertaken. Nor does it cover the wide range of China’s aid activities reported in the dataset used in this paper.

a. Exploiting natural resources

One of the most popular claims about Chinese development finance is that it is directly tied to natural resource extraction. As China grows, it faces increasing pressure to meet internal demands for natural resources (Vines et al. 2009; Taylor 2009). Many African nations such as Angola, Sudan, and Nigeria also have significant untapped natural resources and are witnessing a donor race to gain access to these resources. Some analysts argue that this desire for resource security is the main driver for Chinese aid and investment (Berthélemy 2011; The Economist 2008; Mohan 2008; Marysee and Geenen 2009). For instance, the NYU Wagner School Study concluded that “China’s foreign aid is driven primarily by the need for natural resources” (Lum et al. 2009: 5). Similarly, Foster et al. (2008: 64) conclude that “most Chinese government-funded projects in Sub-Saharan Africa are ultimately aimed at securing a flow of Sub-Saharan Africa’s natural resources for export to China.”

However, many of these assertions are debated. The Chinese government flatly rejects the claim that its aid program is designed to secure access to other countries’ natural resources (PRC 2011; Provost 2011). Dreher and Fuchs (2012) develop and test an econometric model of Chinese aid allocation—drawing on novel sources of aid information from media reports, CIA intelligence reports, the World Food Programme, the China Commerce Yearbook, among others—and find no robust evidence that China’s aid allocation is driven by natural resource endowments. These results are helpful for separating speculation from actuality, but could be bolstered substantially by more comprehensive data on the geospatial distribution of Chinese development assistance. When analyzing Chinese outward investments in Africa rather than aid, the picture changes. Cheung et al. (2011) finds the expected positive effect of natural resource abundance on the distribution of FDI.

b. Supporting “rogue states” with no conditionality

The PRC’s policy of non-interference in the domestic politics of sovereign governments has also prompted the hypothesis that China is bankrolling “rogue states” and enabling their continued survival (Naím 2007; Pehnelt 2007; Traub 2006). The principle of non-interference can be traced back to the Final Communiqué from the 1955 Bandung Conference and is clarified in China’s “Eight Principles.” It implies that Chinese aid allocation is independent of regime type or governance quality of recipient countries. In this regard, the PRC’s White Paper notes that “China never uses foreign aid as a means to interfere in recipient countries’ internal affairs or seek political privileges for itself” (PRC 2011). The Beijing Declaration of the Forum on China-Africa Cooperation (2000) states that “[t]he politicization of human rights and the imposition of human rights conditionalities on economic assistance should be vigorously opposed.” To many observers in the West, this approach is a convenient rationale for “turning a blind eye” and doing business in countries with undemocratic and corrupt regimes with a bad human rights record. A common argument is that when Western donors withhold aid because of democracy or human rights violations, African governments can simply cross the aisle and make a deal with China, thereby undermining aid conditionality (Kurlantzick 2006; Human Rights Watch 2007).

Scholars have discussed whether easy access to cheap Chinese loans with “no strings attached” may have the effect of delaying governance and anti-corruption reforms (Pehnelt 2007; Collier 2007; Mwase 2011).¹² Individual case studies are often presented to support this claim. For example, Lombard (2006) points to Angola, where the government apparently resisted IMF pressure for oil revenue transparency because of its access to an alternative source of external funding: an interest-free loan from the Chinese Export-Import Bank. Others charge that China has effectively become a lender of last resort for governments with poor economic governance that are unable to secure loans from the Bretton Woods Institutions. For example, Downs (2011 a: 93-94) points out that, in spite of “gross economic mismanagement” on the part of the Venezuelan government, the Chinese Development Bank gave it a US\$ 20.6 billion loan and helped “finance [Hugo] Chávez’s bid to win a third consecutive six-year term as president.”¹³ Similar claims have been made about China’s support for Angolan President José Eduardo dos Santos, who has been in power for 33 years (Marques de Morais 2012); Robert Mugabe of Zimbabwe, who has been in power for 25 years (Reuters 2010); and Joseph Kabila, the President of the Democratic Republic of the Congo, who has been in power for 12 years (Mthembu-Salter 2012).

Some analysts have also suggested that the authorities in Beijing have no compunction about allowing African leaders to use Chinese largesse to shore up political support bases and neutralize domestic political opposition (Bearak 2010; Acemoglu and Robinson 2012; Mthembu-Salter 2012).¹⁴ Berger, Bräutigam, and Baumgartner (2011) take a different view. They assert that “there is no evidence at all that in Africa Beijing prefers to cooperate with poorly governed, authoritarian governments instead of democratic regimes.” They also question the characterization of China as “undermining the West’s ability to use conditionality to support human rights and governance initiatives.” This conclusion is supported by the empirical results in Dreher and Fuchs (2012) who find that Chinese aid is no more likely to go to authoritarian regimes than to democracies. But some scholars have questioned whether there might be daylight between Chinese policy and practice. Downs (2011b) has scrutinized multi-billion Chinese loans to developing countries and uncovered evidence that Beijing does in fact exert pressure on their borrowers for better economic management when there is a serious risk of loan default.¹⁵ However, rigorous analysis of whether Beijing’s rhetoric and actions are in alignment requires accurate, comprehensive, and detailed data on the cross-national distribution of Chinese development finance and the terms and conditions of individual projects.

¹² Collier (2007: 86) argues that “[governance] in the bottom billion is already unusually bad, and the Chinese are making it worse, for they are none too sensitive when it comes to matters of governance.” Bräutigam (2009: 21) takes issue with this proposition, arguing instead that “China’s aid does not seem to be particularly toxic” and “the Chinese do not seem to make governance worse.”

¹³ Chávez used the loan to address low-income housing needs and electricity shortages in areas of the country that have traditionally supported the ruling party (Molinski 2010; De Córdoba 2011; Downs 2011a).

¹⁴ A related concern is that Beijing is currying favor with political leaders in Africa by offering university scholarships to their relatives and friends (LaFraniere 2009).

¹⁵ Mwase (2011) provides some preliminary empirical evidence that casts doubt on this assertion.

c. Threatening debt sustainability

Other observers have sounded the debt sustainability alarm, arguing that China's "Going Global" strategy threatens to unravel hard-won gains achieved through the Heavily Indebted Poor Countries (HIPC) Initiative and Multilateral Debt Relief Initiative (MDRI) (Traub 2006; Beattie and Callan 2006; Dahle Huse and Muyakwa 2008). Kurlantzick (2006: 5) warns that "[g]rowing Chinese loans to Africa, especially at high commercial rates, could threaten billions in recent forgiveness by the World Bank and IMF's Heavily Indebted Poor Countries Initiative..." Critics of Beijing's approach of cutting bilateral "mega deals" without consulting other bilateral or multilateral donors and creditors point for example to events in the Democratic Republic of the Congo (DRC) in 2008: The DRC's mining parastatal, Gécamines, inked an agreement with the China Enterprise Group—a group of Chinese firms including China Railway Group Limited, China Sinohydro Corporation, China Metallurgical Group and Zhejiang Huayou Cobalt Company—to create a joint venture called SICOMINES (Marysee and Geenen 2009; Christensen 2010).¹⁶ The initial deal was worth US\$ 9.2 billion, or roughly 90-100% of the DRC's 2008 gross domestic product (Jansson 2011; Mthembu-Salter 2012). The scale and opacity of the so-called "agreement of the century" raised concerns among Congolese parliamentarians, civil society groups, the IMF, and Western aid agencies (Marysee and Geenen 2009). At the time of the deal, the DRC had not met the HIPC Completion Point or secured large-scale debt relief from the Paris Club, the World Bank, the IMF, or the African Development Bank. The country, according to the IMF, was in "debt distress"—public debt constituted 93% of GDP and 502% of government revenue (IMF 2009). To address the concerns of the IMF, the major multilateral development banks, and bilateral creditors, the deal was eventually scaled back to US\$ 6 billion and the requirement that the government provides mining assets as a loan guarantee was scrapped (Manson 2010; Mthembu-Salter 2012).

This episode throws the competing values of the "Washington Consensus" and "Beijing Consensus" into sharp relief. The Chinese authorities question the wisdom of the IMF/World Bank Debt Sustainability Framework (DSF)—in particular, that (a) *current* economic indicators (GDP, government revenue, exports of goods and services) are good proxies for debt repayment capacity, and that (b) one must consider a project's financial viability *and* its macroeconomic effects (Li 2006; Christensen 2010). Beijing advances the alternative notion of "development sustainability," which involves a forward-looking analysis of a country's debt repayment capacity and ability to generate additional revenue through natural resource exploitation (Africa Confidential 2007). The Sino-Congolese Cooperation Agreement also underscores the importance of having access to credible, detailed data on incoming Chinese development finance flows. The secrecy of the deal not only fueled speculation and frustrated attempts to assess the debt sustainability implications, but also

¹⁶ The Sicominex joint mining venture is often referred to as a "barter deal" because the Government of the DRC offered a consortium of Chinese companies access to mining titles in exchange for China Exim Bank infrastructure loans (Jansson 2011).

delayed the provision of debt relief from Western creditors.¹⁷ Ultimately, debates on debt sustainability are severely restricted by a dearth of reliable information on the specific loan terms of various Chinese flows to Africa, the lack of which makes it extremely difficult to determine levels of concessionality.

d. Violating environmental and labor standards

Another popular claim is that easy access to Chinese finance has prompted a sharp turn towards infrastructure and natural resource development projects with few or no environmental safeguards (Junbo 2007; Bosshard 2008; Suatman and Hairong 2009; Peh and Eyal 2010). Kurlantzick (2006: 5) argues that “Chinese investment could contribute to unchecked environmental destruction and poor labor standards, since Chinese firms have little experience with green policies and unions at home, and some African nations have powerful union movements.” Kotschwar et al. (2011) cite “[e]gregious violations of international labor and environmental standards, particularly in the mining sector, [which] have been uncovered in Chinese-led investments in the Democratic Republic of the Congo, Angola and Zambia.” There are several well-known examples of crack-downs on Chinese activity: Sierra Leone banned timber exports due to severe environmental degradation from Chinese and other foreign logging companies (BBC 2008). Gabon’s national park service ordered Sinopec to halt exploration for oil in Loango National Park in September 2006 due to high risk of environmental degradation. China’s Exim Bank is known to fund dam projects that failed to attract Western funding, often because of adverse environmental and social impacts, such as the Lower Kafue Gorge Dam in Zambia, the Bui Dam in Ghana, and the Merowe Dam in Sudan (Bosshard 2008). Both domestic and transnational NGOs have linked Chinese-funded projects to violations of domestic and international labor standards. Human Rights Watch (2011) recently released a detailed report on labor abuses in Zambia’s Chinese state-owned copper mines and employment conditions that failed to meet domestic and international standards. Interviews detailed poor health and safety standards, regular 12 to 18 hour shifts, and anti-union activities (Human Rights Watch 2011).¹⁸

¹⁷ Berthélemy (2011: 7) provides some preliminary empirical evidence that suggests “China’s engagement in Africa has [not] substantially impaired efforts to ease Africa’s debt burden.” However, a careful study of the impact of Chinese development finance on debt sustainability in sub-Saharan Africa is difficult to undertake without reliable data on Chinese development finance (Christensen 2010).

¹⁸ Some analysts have also pointed to promising signs that the Chinese government will soon put in place environmental safeguards for some of its overseas aid programs and investments (Herbertson 2011). In 2008 Exim Bank released an “Issuance Notice” of the “Guidelines for Environmental and Social Impact Assessments of the China Export and Import Bank’s (China EXIM Bank) Loan Projects.” Translated excerpts are available at: <http://www.globalwitness.org/sites/default/files/library/Chinese%20guidelines%20EN.pdf>. These guidelines, if approved “would require companies operating overseas to conduct environmental impact assessments, develop mitigation measures, compensate people for environmental damage, and adhere to international treaties signed by China and host countries. Chinese companies would be required to follow Chinese environmental standards if they were higher than host countries” (Herbertson 2011: 26). However, a June 2012 report by International Rivers stated, “[i]t remains unclear whether China Export Import Bank has also developed the institutional framework necessary to implement these guidelines” (Herbertson 2012: 15).

However, many of the claims found in the literature do not rest on strong empirical foundations. To our knowledge, there are no cross-national or sub-national statistical studies that demonstrate a link between increased environmental damage or labor violations and the receipt of Chinese grants, loans, or investments. Similar to debates on Chinese development finance and resource interests, inadequate mapping of Chinese finance to Africa has hindered more effective surveying of the environmental impact of such flows.¹⁹

e. Funding projects with a weak link to growth

China's contribution to economic growth on the continent is another subject of debate. Some analysts note that Beijing is fond of using overseas development financing to support highly visible projects and programs, such as cultural centers, government buildings, and stadiums, that offer limited or transitory economic benefits (Will 2012; Lum et al. 2009). Others point out that China will finance the construction of a beautiful new hospital, yet provide no equipment or trained doctors or nurses to staff it, thus undermining its impact and long-term sustainability (Yin 2012; Marques de Morais 2012). Still others question the quality of Chinese construction—for instance; cracks appeared in the walls of a hospital in Angola only months after the grand opening and a Chinese funded road in Zambia was swept away by rain shortly after it was completed (The Economist 2011b).

The counter-argument advanced by scholars, policymakers, and journalists is that the Chinese provide demand-driven assistance and deliver tangible results—passable roads, modern buildings for legislatures and government ministries, and new technologies and know-how—in a relatively short period of time (Zafar 2007; Moyo 2009; Wade 2008; Tan-Mullins et al. 2010; Guloba et al. 2010; Glennie 2010). Others emphasize that China aids and invests in ways that *complement* the activities of Western aid agencies. Moss and Rose (2006: 2) note that the Chinese “[target] sectors where Western private or official capital is often scarce. Chinese companies and banks are investing heavily in physical infrastructure, a sector with high demand that most donors have neglected in Africa in favor of education and health. Chinese firms, with official financial [backing] from banks like ExIm, have also entered markets generally shunned by the Western private sector because of risk, lack of information, or concerns about corruption.”²⁰

Finally, the issue of corruption—in Chinese projects the government institutions that benefit from Beijing's generosity—has become a source of significant controversy and debate. Beijing claims that Chinese aid and investment projects are less vulnerable to corruption because they are usually tied to the purchase of goods and services from Chinese firms, thus limiting the amount of cash that African governments can directly access (Mwase and Yang

¹⁹ In 2013, AidData plans to publicly release an updated version of our Chinese official finance dataset with sub-national geographic locations of projects. Geocoded Chinese aid and investment data and environmental remote sensing data will provide the informational foundation needed to analyze how different types of Chinese projects impact environmental outcomes at the locations where they are implemented.

²⁰ Also see Mwase and Yang (2012).

2012). However, critics argue that Beijing's distaste for competitive bidding and classification of foreign aid information as a "state secret" invite suspicion and abuse (Huse and Muyakwa 2008; Foster et al. 2009; Christensen 2010). David Shambaugh of George Washington University says that Chinese foreign aid "is so strikingly opaque it really makes one wonder what they are trying to hide" (cited in LaFraniere and Grobler 2009).

In summary, the body of literature seeking to understand the nature, extent, causes, and consequences of Chinese investment and assistance is vast and growing. A wide range of hypotheses and policy debates have emerged about the degree to which China's efforts are complementary with or contradictory to those of Western donors. However, without reliable project-level data on Chinese development finance, most of these hypotheses will remain untested and the ongoing policy debates will generate more heat than light (Tierney et al. 2011). AidData's pilot media-based data collection (MBDC) methodology seeks to remedy this problem by supplying interactive data that the research community and policy community can use to determine which claims survive careful empirical scrutiny (Strange et al. 2013).

4. Quantifying Chinese Development Finance

Unlike OECD-DAC donors, the Chinese government does not release detailed, project-level financial information about its overseas aid activities.²¹ Lancaster (2007) cites several reasons why the Chinese authorities have pushed back on calls for greater transparency. First, Chinese officials have argued that publishing country-level data will draw attention to which countries are the largest recipients and result in pressure from other governments for more aid. Second, it is possible that there are no official aggregate data as flows come from various ministries, and officials may still be unsure of how to price Chinese labor used to implement projects, which suggests that the aid reporting infrastructure could be systematically underdeveloped (see again the overview on China's complex aid architecture in Section 2). Third, publishing total volumes of Chinese aid may also provoke domestic criticism about spending abroad when there are so many Chinese still living in poverty. Grimm et al. (2011) add that resistance to aid transparency may reflect a broader disinterest in complying with Western (OECD-DAC) standards. Hubbard (2007) speculates that there may be an incentive to maintain confidentiality of flows from the Exim Bank in order to protect proprietary

²¹ MOFCOM's annual yearbooks reported a list of "comprehensive projects completed" (对外援助成套项目建成) by recipient country, although they do not identify the financial value of these projects. Interestingly, China stopped reporting this item onwards from the 2006 edition of the yearbook. These data cover the years 1990-2005 (except 2002) and are available on the AidData Research page at <http://aiddata.org/content/index/Research/research-datasets>. The World Food Program's Food Aid Information System (FAIS; available at <http://www.wfp.org/fais/>) reports food aid provided by China according to recipient country, including information about the type of commodity being delivered, and the mode of delivery, among others. The Financial Tracking Service (FTS; available at <http://fts.unocha.org/>) tracks data on humanitarian aid flows, including by China, and also according to recipients and years. However, food aid and humanitarian aid constitute only a small fraction of China's development finance. Below in Section 6 we compare the new media-based database with these three data sources.

information as well as commercial and competitive confidentiality of Chinese exporters.²² More broadly, Beijing may view the publication of official project-level development finance data as capitulation to the Western-centric global aid reporting system that it argued against at Busan.

As a result of this intransparency, China's aid to Africa is the subject of much speculation, confusion, and misinformation. Scholars, policy analysts, and journalists routinely use inflated estimates to demonstrate the threat that China poses to Western donors on the continent. One reporter states "the loans China offered Africa in 2006 were three times the total development aid given by rich countries in the [OECD] and nearly 25 times the total stock of loans and export credits approved by the US Export-Import Bank for sub-Saharan Africa" (Harman 2007). A UN report says "[t]he scale of China's assistance to other developing countries has increased by 30 percent and reached 1 percent of China's GDP, surpassing all other Southern countries, and many northern ones" (Zahran 2011: section 133). Estimates like these often circulate with little understanding of what types of flows were counted and how estimates were derived.

a. Chinese and Western definitions of "what counts" as aid

Conceptual differences confound efforts to catalogue and measure "Chinese aid." Chinese development finance flows do not easily align with the well-defined OECD-DAC definitions of Official Development Assistance (ODA), Other Official Flows (OOF), and Private Flows. The 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).²³ Members of the DAC have agreed that assistance to refugees, scholarships for developing country students, peaceful use of nuclear energy, and funding relevant research are included in ODA as well as specific types of peacekeeping, civil police work, and social and cultural programs. Military aid, anti-terrorism activities, peacekeeping enforcement, joint venture, and cooperative projects are excluded (OECD 2008). OOF is categorized 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). The third DAC category is Private Flows which "consist of flows at market terms financed out of private sector resources (i.e. changes in holdings of private long-term assets held by residents of the reporting country) and private grants (i.e. grants by non-governmental organizations and other private bodies, net of subsidies received from the

²² AidData researchers heard this explanation in numerous phone conversations with Chinese government officials between 2008-2011 after requesting project level data.

²³ The OECD DAC Glossary of Key Terms and Concepts is available online at www.oecd.org/dac/glossary.

official sector)” (OECD DAC glossary). Private flows include foreign direct investment, private export credits, securities of multilateral agencies, grants from charitable NGOs/foundations, and bilateral portfolio investments, among others.

Chinese foreign aid differs in several distinct ways from the DAC classifications; for instance China does count military assistance as “aid” and does not count scholarships for developing country students (Grimm et al. 2011). But there is no consensus as to how to classify many Chinese financial instruments such as preferential export buyer’s credits, natural resource-backed loans, and lines of credit. So-called Chinese “package financing” means that development finance often consists of agreements that mix aid and investment, and/or concessional and non-concessional financing (Bräutigam 2010; Grimm et al. 2011; Davies 2008). Chinese state-owned enterprises also blur the line between official government finance and private flows; FDI or joint ventures can come from firms that are either private or state-owned.

b. Previous estimates of Chinese development finance

Analysts still disagree about the nature of Chinese development finance and what can be counted as ODA versus OOF. The difficulties to align Chinese development finance with DAC categories are further complicated by the fact that many transactions with African countries are in fact bundles of several financing mechanisms. Deborah Bräutigam argues that a relatively small amount of finance is given as ODA to Africa—only around US\$ 1.4 billion—but the majority comes as OOF (Bräutigam 2011b). A study by the Congressional Research Service and NYU Wagner School took a broader approach, characterizing many more types of flows, including state-owned companies investing abroad, as “aid and related activities.” They arrived at an estimate of US\$ 18 billion in annual aid and related activities to Africa (Lum et al. 2009). However, this dataset is not open to the public and therefore it is difficult to evaluate the accuracy of these estimates. Table 1 displays Chinese development finance estimates provided by these and other previous studies.

These wide-ranging estimates—US\$ 0.58 to US\$ 18 billion in annual official development assistance to Africa—have significant implications for how China should be considered as a donor on the continent in comparison to traditional DAC donors. If the upper estimate is to be believed, China gave three times more assistance to Africa in 2007 than the United States, which disbursed US\$ 5.3 billion in ODA to Africa. All DAC donors disbursed only US\$ 27 billion in ODA to Africa in 2007 (DAC CRS database). Yet high estimates of Chinese aid are likely inflated for several reasons discussed below.

c. A Framework for Quantifying Chinese Official Finance

In this paper, we argue that there is a compelling need for a common vocabulary and categorization scheme for Chinese development finance. Deborah Bräutigam’s pioneering work (2009, 2010, 2011a, 2011b) has demonstrated that many forms of Chinese development finance do not fit cleanly into traditional OECD-DAC categorizations.

Table 1. Estimates of Chinese development finance to Africa

Source	Year	Amount per year	Flow type
Bräutigam (2011a)	2007	US\$ 1.4B	ODA
Wang (2007)	2004-2005	US\$ 1 – 1.5B	ODA
The Economist (2004)	2002	US\$ 1.8B	ODA
Lum et al. (2009)	2007	US\$ 17.96B	Aid and related activities
Christensen (2010)	2009	US\$ 2.1B	Aid
Lancaster (2007)	2007	US\$ 582-875M**	Aid
He (2006)	1956-2006	US\$ 5.7B***	Aid
Kurlantzick (2006)	2004	US\$ 2.7B	Aid
Fitch Ratings (2011)	2001-2010	US\$ 67.2B	EXIM Bank loans
Alden and Alves (2009)	2006	US\$12-15B	EXIM Bank loans
Harman (2007)	2006	US\$12.5B	EXIM Bank loans
Christensen (2010)	2009	US\$375M	Debt relief

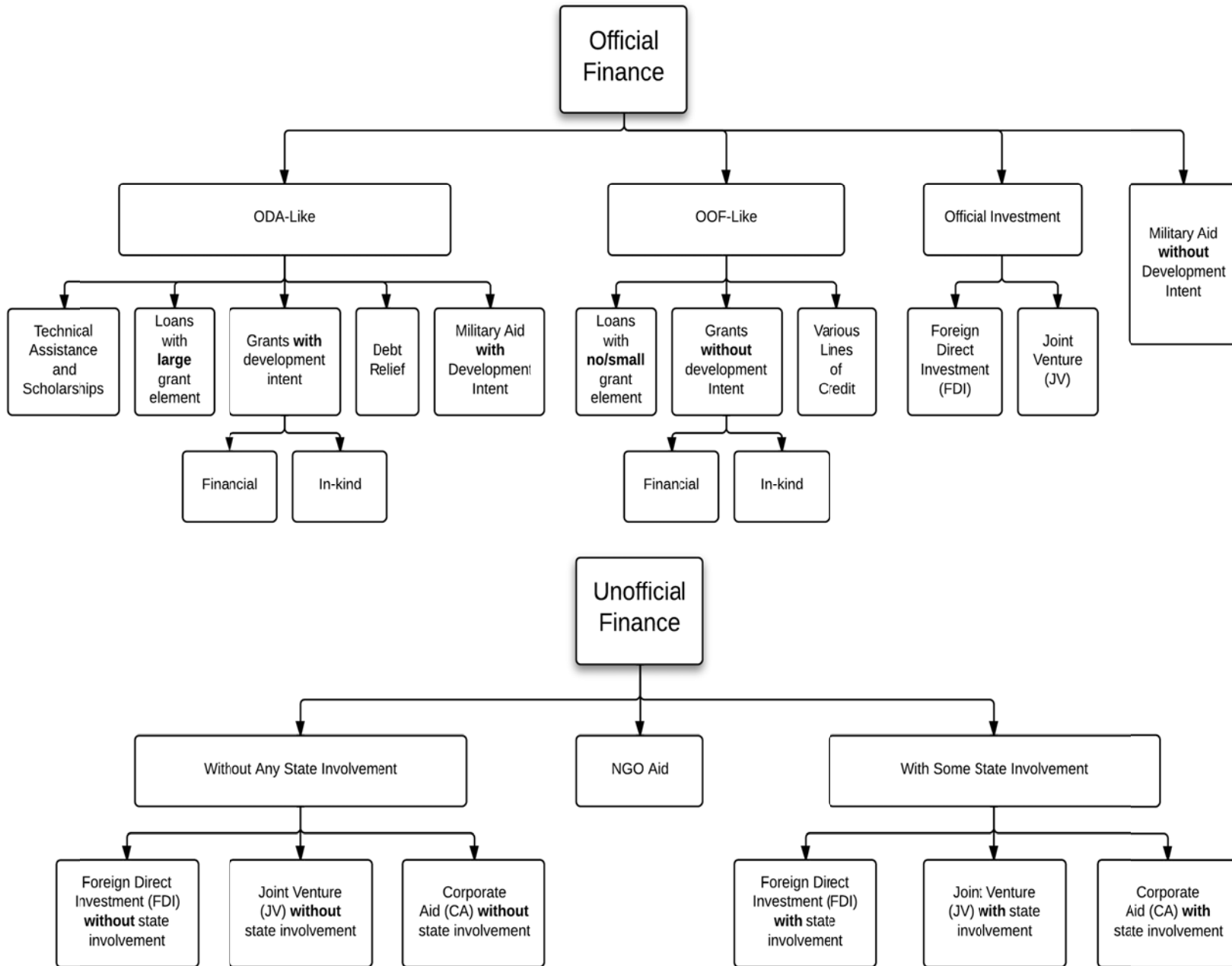
**Authors' calculations based on mid-point of the estimated range of total Chinese aid (\$1.5-2B), and the estimated range of Africa financing (33%-50%).

***Author's estimation for the entire 50-year time period.

However, neither the research community nor the policy community has coalesced around a single taxonomy for classifying and categorizing Chinese development finance flows that enables some degree of comparison with development finance flows from OECD-DAC donors. We have made an initial attempt to create such taxonomy. In an effort to incorporate the insights and address the warnings of the leading experts on Chinese aid (Bräutigam 2009, 2011b; Grimm et al. 2011), Figure 1 provides the general framework that we employed to categorize different types of Chinese development finance. The April 2013 version of our dataset and the live, interactive online database platform allow users to screen out different types of financial flows or aggregate all types.

Instead of combining aid and investment projects into one omnibus category, we have attempted to create more precise classifications and definitions that capture the diversity of Chinese development finance modalities. We classify all projects according to one of eleven flow class categories: ODA-like, OOF-like, Official Investment, Military Aid without development intent, Joint Ventures with Chinese state involvement, Joint Ventures without Chinese state involvement, Foreign Direct Investment (FDI) with Chinese state involvement, Foreign Direct Investment (FDI) without Chinese state involvement, NGO aid, Corporate Aid from state-owned enterprises, and Corporate Aid from private

Figure 1. Chinese Official and Unofficial Finance



enterprises. Our database also has a category called “Vague (Official Finance),” for flows of official financing that are either ODA-like or OOF-like, but for which there is insufficient information to assign the flows to either the ODA-like or OOF-like category (as well as a further residual category “Vague Residual Commercial Activities” for unofficial flows). We define China’s Official Finance as the sum of ODA-like, OOF-like, and Vague (Official Finance). The remaining categories capture a range of aid and investment activities that involve varying levels of state involvement. While we recognize that others may want to use our data for different purposes, the focus of this paper is on non-investment *official financing* from China to Africa, regardless of its developmental, commercial, or representational intent.²⁴ We use the term “Official Finance” as shorthand for these official financing flows in the remainder of the paper.

Our categorization scheme has several benefits. It explicitly accounts for the types of Chinese overseas financial activities that do not easily fit within existing categorization schemes (e.g., joint ventures and investments that involve Chinese state-owned enterprises), while at the same time using some categories that can be mapped back onto OECD-DAC definitions with a reasonable degree of confidence. In particular, the introduction of “ODA-like,” “OOF-like,” and “Vague Official Finance” categories provide a basis for analysts to make more accurate comparisons of *official* finance provided by China and Western donors. We have, in effect, designed a taxonomy that is compatible with OECD-DAC categories and definitions, but also flexible enough to accommodate the unique attributes of Chinese development finance. Additionally, by introducing the “Vague Official Finance” and “Vague Residual Commercial Activities,” we have made the imprecision of our data and the uncertainty of our flow type designations explicit. We consider this last point to be particularly important. At present, many scholars who study Chinese aid and investment have refused to be transparent about their data and methods. We believe that transparency is a necessary condition for scientific progress because it invites and permits scrutiny, which will uncover weaknesses in our methods and errors in the application of our method. Our media-based data collection is imperfect and imprecise (Strange et al. 2013). As long as we are clear about procedures, other researchers, journalists, and government officials will be able to pinpoint specific errors in our database and critique the methods that we have employed. This is an important precondition for us (or others) to improve the methods used in the construction of the database.

While attentive and more knowledgeable scholars can certainly help us to improve our data and methods, there is one actor that could be even more helpful in this regard—the Chinese government. The Chinese authorities presumably have more accurate information about their own overseas development finance activities than we do. Nothing would make us

²⁴ The data contained in the “unofficial” categories are less complete than the data on official finance. The incomplete nature of these data is a by-product of our methodology, which includes search criteria that are geared more towards capturing official financing flows (Strange et al. 2013). Users should therefore proceed with caution when using these data. In future iterations of the dataset, we hope to expand the search criteria in our methodology to improve the completeness of these records.

happier than for the Chinese government to correct the record if and when the media sources upon which we rely are incorrect. We have made a great effort to make such corrections easy to perform by providing an online platform with crowd-sourcing features. Ideally, Chinese government agencies would disclose detailed and comprehensive official data at the project level, thus obviating the need for researchers to devote time and effort to construct sub-optimal data sets through media sources.²⁵ However, Beijing has thus far not chosen to join the open data movement. Barring a major change in the official policy of the Chinese government, the state of knowledge about Chinese aid distribution and impact will be improved by those who are willing to devote the time and energy needed to build a reasonably comprehensive record of China's overseas development activities. To this end, we have created a web-based platform (at china.aiddata.org) to crowd-source better information about Chinese aid and investment projects and programs. We describe the purpose and features of this online platform at greater length below.

5. A Media-Based Approach to Development Finance Data Collection

Political scientists, economists, sociologists, geographers, and computer scientists have used media-based data collection methodologies to track violent and non-violent conflict incidents; document the scale, scope, and impact of natural and man-made disasters; and study patterns of political interaction and sentiment (Schrodt and Gerner 1994; King and Lowe 2003; Shellman 2008; Raleigh et al. 2010; Leetaru 2010; Yonamine and Schrodt 2011; EM-DAT 2012; Salehyan et al. 2012). However, the study of development finance has not yet benefited from the systematic application of MBDC methods. Several ad-hoc efforts have been undertaken to collect data on Chinese foreign aid and investment, but none have resulted in the publication of systematic, transparent, replicable data collection procedures (Foster et al. 2008; Lum et al. 2009; Gallagher et al. 2012).

There are several challenges to media-based data collection noted in detail in AidData's MBDC methodology (Strange et al. 2013). The nature of media-based data collection presents unique challenges for data completeness, accuracy, quality, and credibility (Woolley 2000; Schrodt et al. 2001; Reeves et al. 2006). First, as with any social scientific inquiry, there is potential for human error by the coder. Such errors can occur during online searches as well as during the data entry stage. Second, information extracted from public media outlets throughout the world cannot substitute for complete and accurate statistical data from official sources. Media-based data collection is only as good as the imperfect data sources upon which it relies. Did the Namibian presidential palace (ID 1255) cost N\$60 million (as

²⁵ AidData researchers contacted many non-DAC donors (including China) between 2008 and 2012, and while many governments were willing to provide project-level data to be published on the Aiddata.org web portal, China was not. AidData researchers articulated the various benefits of aid transparency, including the fact that the world would see China's generosity. In response to this specific point, one Chinese MOFCOM official responded in a 2009 phone call that "Everyone who needs to know how generous we are already knows."

reported by the Chinese government) or N\$30 million (according to AllAfrica)? If Wikileaks and BBC Media report two different commitment years and amounts for a Djiboutian fiber optics cable project (ID 421), which source, if any, should be considered authoritative? In the absence of official project-level data, there is no foolproof method for adjudicating between conflicting media reports.²⁶ This challenge may be particularly acute in less developed countries with lower levels of press freedom and fewer well-trained, independent journalists. The quality of many mainstream Western media reports is likely limited by local resource constraints in Africa and the absence of strong, independent media sectors (Musakwa 2013). Similarly, if the motives of media reporting are economic or political in nature, the objectivity and utility of the data are questionable. Third, relying on media reports poses a risk of "detection bias," or the risk that countries with lower levels of press freedom are less likely to permit journalists to report on official finance activities from various donors. Among sociologists and those who study conflict and terrorism, there is an appreciation for the fact that the use of media reports to identify inherently political "events" (e.g., political protests, terrorist attacks) introduces a risk of selection bias (McCarthy et al. 1996; Earl et al. 2004; Drakos and Gofas 2006; Drakos 2007).²⁷ While AidData's methodology places a great deal of emphasis on "following the money" and tracking projects from start to finish, Strange et al. (2013) admit that the utility of MBDC increases when complemented by other methods of data collection, such as on-site fieldwork and correspondence with various project stakeholders. A crowd-sourcing platform to complement the core dataset provides an enabling environment for such correspondence. In sum, media-based data collection is an admittedly imperfect method for filling major data gaps that impede research and evidence-based policymaking.

AidData's pilot MBDC methodology for gathering and standardizing project-level development finance information is divided into two stages (Strange et al. 2013). During the first stage, projects undertaken in a particular country and supported by a specific supplier of development finance—be it a sovereign government, multilateral institution, non-governmental organization, or private foundation—are identified through Factiva, a Dow Jones-owned media database. Factiva draws on approximately 28,000 media sources

²⁶ However, it is also not the case that official sources are always more credible (and valuable) than media-based information. First, media-based data collection that relies on information regarding the implementation and/or the completion of projects can provide more useful and accurate project-level information than official reports, depending on how official project information is collected, updated and presented. Indeed, the reliability and usefulness of "official" data often declines sharply as projects move from the planning stage to the implementation stage. As projects are carried out, donors and recipients often encounter formidable coordination and accountability challenges (Kharas 2007). Second, aid data are politically sensitive and might thus be more susceptible to manipulation. In this regard, Wallace (2011) suggests caution in the usage of politically sensitive data provided by authoritarian regimes. He provides evidence for China that differences between GDP and electricity growth at the sub-national level follow the political business cycle.

²⁷ However, given that research on aid allocation and aid effectiveness has not benefited significantly from the use of media-based data collection methods, the existing literature does not offer much insight regarding whether, to what degree, and how detection bias might influence media-based aid and development finance data and the inferences we draw based on such data.

worldwide in 23 languages. Most of these sources are newspapers, radio and television transcripts. In the second stage, targeted searches are conducted for projects initially identified during the first stage. Strange et al. (2013) describe this methodology in great detail, providing a step-by-step guide that documents how AidData conducts these searches and records results during both stages.

This is not the first attempt to track Chinese official finance flows with media sources.²⁸ In 2008, New York University's Wagner School produced a report on Chinese assistance to Africa, Southeast Asia, and Latin America for the U.S. Congressional Research Service (CRS). The authors of that report relied primarily upon media-based data collection methods to generate estimates of total Chinese aid and investment from 2002 to 2007 (Lum et al. 2009). However, the only details publicly disclosed about the nature of their methodology were in a footnote: "the NYU Wagner School research team relied largely upon the international press and scholarly research. Sources included allAfrica.com, the Economist Intelligence Unit (EIU), International Relations and Security Network, the PRC Ministry of Commerce, ReliefWeb (United Nations), Reuters, Xinhua, and other news agencies" (Lum et al. 2009: 4). In 2008, researchers from the World Bank's Public-Private Infrastructure Advisory Facility (PPIAF) published an alternative media-based methodology to identify Chinese infrastructure and natural resource extraction projects in sub-Saharan Africa (Foster et al. 2008).²⁹ The PPIAF team provided far more methodological detail than the NYU Wagner School team, but did not document its data collection procedures in a way that could be easily scrutinized or replicated by other researchers.³⁰

Several years later, the Inter-American Dialogue commissioned a report on China's aid and investment activities in Latin America and the Caribbean and sourced information from the official gazettes of recipient countries, interviews with bank officials, Chinese embassy reports, and media reports (Gallagher et al. 2012). Rather than documenting their data collection procedures in a systematic, transparent, or replicable way, the authors of the report provided "the most valuable sources for each individual loan" in an annex (Gallagher et al. 2012: 5). Frustrated by the Chinese government's unwillingness to disclose data on the official export credits, the Export-Import Bank of the United States (U.S. EX-IM Bank) has also resorted to media-based data collection methods (US EX-IM Bank 2012). The exasperated tone of a recent U.S. EX-IM Bank *Competitiveness Report* calls attention to the demand that exists within the U.S. Government for credible information about the PRC's export finance activities: "With lines of credit coming from the very top down [in Beijing], there are untold transactions that probably never show up on G-7 exporter radar screens; there are no lost sales or smoking guns. But then, how does one measure what one cannot

²⁸ Early Chinese aid since its first aid donations in the 1950s until 1987 has been tracked by Bartke (1989). He collected information on more than 500 projects from 2,500 news items.

²⁹ This methodology uncovered more than 300 individual infrastructure and natural resource extraction projects financed by the Chinese government between 2001 and 2007.

³⁰ AidData's media-based data collection methodology is based in part on the methodology developed by the Public-Private Infrastructure Advisory Facility (PPIAF) (Foster et al. 2008; Strange et al. 2013).

see?” (U.S. EX-IM Bank 2011: 113). Similarly, while focused on Chinese commercial investments rather than development finance, the China Global Investment Tracker launched in 2012 by the Heritage Foundation provides a database of Chinese investments and contracts worldwide that exceed US\$ 100 million (Scissors 2012a). The Tracker provides investment-level data, but does not disclose sources or methods. From direct correspondence with the lead researcher at the Heritage Foundation responsible for the Tracker we learned that the underlying data are culled from “business wires, corporate press releases, and local journalism from countries where such are considered reliable, e.g. Reuters, the Sinomach website, and The Australian” (correspondence with China Investment Tracker team, 9 October 2012). The Heritage Foundation also has no intention of publishing a methodology document. They worry that “imitators” will try to produce a similar product (correspondence with China Investment Tracker team, 9 October 2012).³¹ The Heritage Foundation’s position on public disclosure is indicative of a broader challenge: in spite of the scientific benefits of transparency and replicability, researchers who generate novel Chinese aid and investment data have a strong disincentive to disclose their sources or methods in order to preserve reputational benefits and/or the commercial value of their data.³² This issue is certainly exacerbated by the absence of official-level data.

Previous efforts to classify or collect Chinese development finance data have encountered six primary challenges. First, although many Chinese projects are cancelled, mothballed, or scaled back after the original announcement is made, previous data collection initiatives did not carefully “follow the money” from initial announcement to implementation, thus increasing the risk of over-counting (Bräutigam 2011b). Therefore, AidData’s research team conducted follow-up audits on all announced projects in order to mitigate the risk of mistaking project announcements for initiated or completed projects. This effort to “follow the money” also revealed discrepancies between announced project details and actual results as projects were implemented and completed.

Second, researchers have paid insufficient attention to double-counting of individual projects and activities reported by multiple media reports over multiple years.³³ To address this challenge, AidData employs a web-based data platform with filtering and keyword search functions that facilitate the identification and elimination of duplicate projects. Project IDs are “split” into separate records when distinct project activities and their associated financial

³¹ During correspondence with AidData, a China Investment Tracker researcher stated, “I don’t intend to publish a methodology document because a proper one would include information...that would be immediately used by the imitators that have sprung up the last two years. Nor, for the same reason, do I make available the backing links we have. However, I do provide these links when there are particular inquiries, in part because it’s a good check.”

³² As McCullough and McKittrick (2009: 2) note, “[w]hen a piece of academic research takes on a public role, such as becoming the basis for public policy decisions, practices that obstruct independent replication, such as refusal to disclose data, or the concealment of details about computational methods, prevent the proper functioning of the scientific process and can lead to poor public decision making.”

³³ Lum (2009: 13) and Grimm et al. (2011: 16) point out that double-counting has most likely resulted in inflated estimates of Chinese aid.

values are known. Each record's project description mentions the other components of the "umbrella" agreement, thereby "linking" the records. After projects in the database were coded by sector, each researcher was assigned a set of recipient countries to examine for duplicate records. If evidence showed that two records referred to the same project, researchers "merged" these project IDs by combining each record's unique project details into a single ID. If records looked conspicuously similar but the researchers were at all uncertain, they would report the two (or more) records to a project manager (over 87 such reports were made). When potential duplicates were reviewed but ultimately left as separate projects, this review process was indicated in each of the project descriptions.

Third, most scholars and analysts elide the issue of how to classify different forms of Chinese development finance. Despite evidence from careful qualitative studies that Beijing uses a diverse set of financial instruments to support development activities in Africa, none of the existing data collection initiatives attempt to categorize Chinese projects and financial flows in ways that enable comparison with OECD-DAC measures of development finance.³⁴ We adopted a different approach. Rather than rolling all aid and investment projects into one category, we classified all projects according to one of eleven flow type categories, as described above. The purposes of this categorization scheme are to (a) derive estimates which are broadly compatible and comparable with OECD-DAC definitions and estimates of official finance, (b) capture qualitatively different forms of Chinese aid and investment that do not align with OECD categories, and (c) make explicit the level of uncertainty in our estimates of ODA and OOF.

Fourth, a lack of transparency in research methods has impeded efforts to improve knowledge about the distribution and impact of Chinese development finance. When researchers do not disclose their methods, it is virtually impossible to scrutinize—and improve—the methods used to create knowledge. In some cases, sources have also been inaccessible, making it difficult to ascertain the quality of the data reported. Documenting and disclosing research methods allows database users to identify potential errors and procedural flaws and thus facilitates the improvement of methods and data quality.

Fifth, unlike previous efforts that rely only on English-language sources to track Chinese aid, trained Chinese-language experts at AidData conducted Chinese-language search queries to fill data gaps and enhance data accuracy. During Chinese-language searching, researchers targeted project IDs within our database that had no sources from Chinese or recipient news agencies. Of all the official finance project records in our database, 47% contain at least one Chinese media source.

³⁴ The CRS/Wagner School study generates a measure of "PRC foreign assistance and related activities," which they define as "pledges of aid or loans and government-sponsored investment projects" (Lum et al. 2009: 3). The Inter-American Dialogue reports on "Chinese international lending" (Gallagher et al. 2012). The World Bank-PPIAF Building Bridges report seeks to measure "Chinese infrastructure finance" (Foster et al. 2008). The Heritage Foundation Global Investment Tracker captures "Chinese investments and contracts worldwide beyond Treasury bonds" (Scissors 2012b).

Finally, wherever possible, we avoided a "sole-sourcing" data collection process, or relying on data from a single source to track Chinese development finance projects. AidData researchers instead employed a triangulation system wherein multiple sources for the same project provided data about different project attributes. This approach resulted in more systematic variable coverage across the database and also helped expose instances of conflicting data for a single project. For example, if two separate media reports stated different financial values for one project, then researchers gathered additional information to discern the project's actual value. In our database the average official project has 2.2 sources. More broadly, source triangulation helped minimize data deficiencies resulting from uncertainty over whether certain projects were actually undertaken and completed following their announcement. However, given the often-limited availability of project-specific news sources, 47% of our project records still rely on a single source. With greater access to supplementary project documentation, sole-sourced project records should be corroborated and improved.³⁵

6. New Evidence on Chinese Official Finance to Africa

Our database on Chinese official finance includes 1,673 non-investment projects to 50 recipient countries over the 2000-2011 period. These values (and the subsequent analysis) do not include data for two types of official finance: Official Investments and Military Aid without development intent. This is because the objective of AidData's database was to track Chinese official development finance; as a result, project reporting for these two flow classes is likely not as comprehensive.³⁶ Focusing thus on non-investment official finance to Africa, 15 percent of the projects remain unverified pledges.³⁷ Figure 2 shows the composition of projects over time, separating pledges from committed projects, those currently being implemented, and completed projects. This does not necessarily mean that a project has not reached the next stage of completion; it only means that we did not find any information in media reports that one of the subsequent stages has been reached. Since we cannot be sure that these projects do indeed get formally committed, we exclude pledges from the analysis below (251 projects amounting to US\$ 25.9 billion; this value and all following values are in

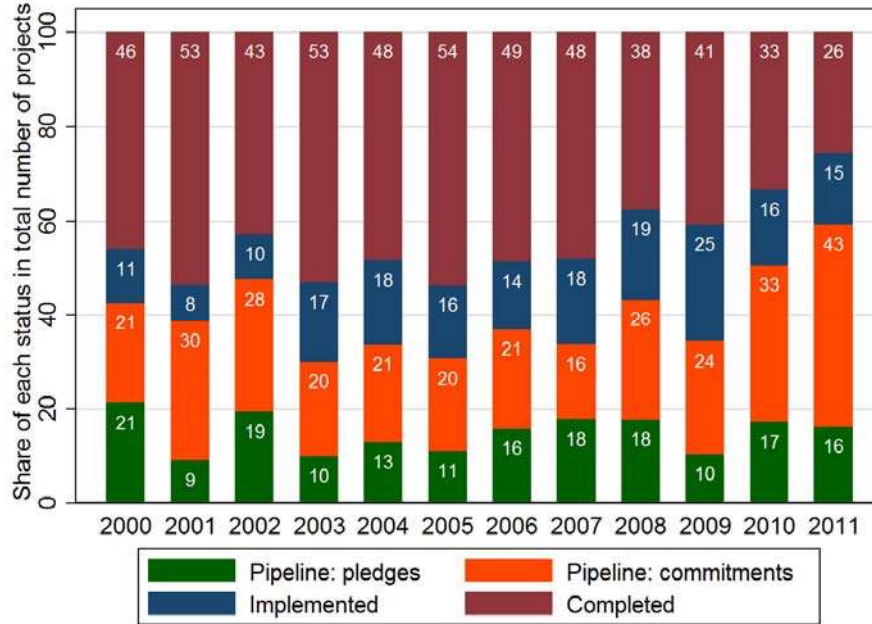
³⁵ In future updates to our dataset, we plan to refine our search mechanisms to yield more (and more relevant) news sources.

³⁶ The initial dataset contains 26 Official Investment projects, as well as 281 projects coded as either FDI or Joint Ventures with or without state involvement. We leave the systematic collection of China's investment flows through media sources for future research. Note also that we have also excluded all 28 cancelled projects from these and the following statistics.

³⁷ Pledges are defined as verbal, informal agreements while commitments are defined as formal written, bindings contracts. Determinations are based on a set of key words discussed in detail in Appendix E of AidData's Media-Based Data Collection Methodology (Strange et al. 2013).

constant 2009 US dollars).³⁸ By doing so, we intend to achieve comparability with aid commitments as defined by the OECD-DAC.

Figure 2. Share of each reported status of all projects over time, 2000-2011



Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

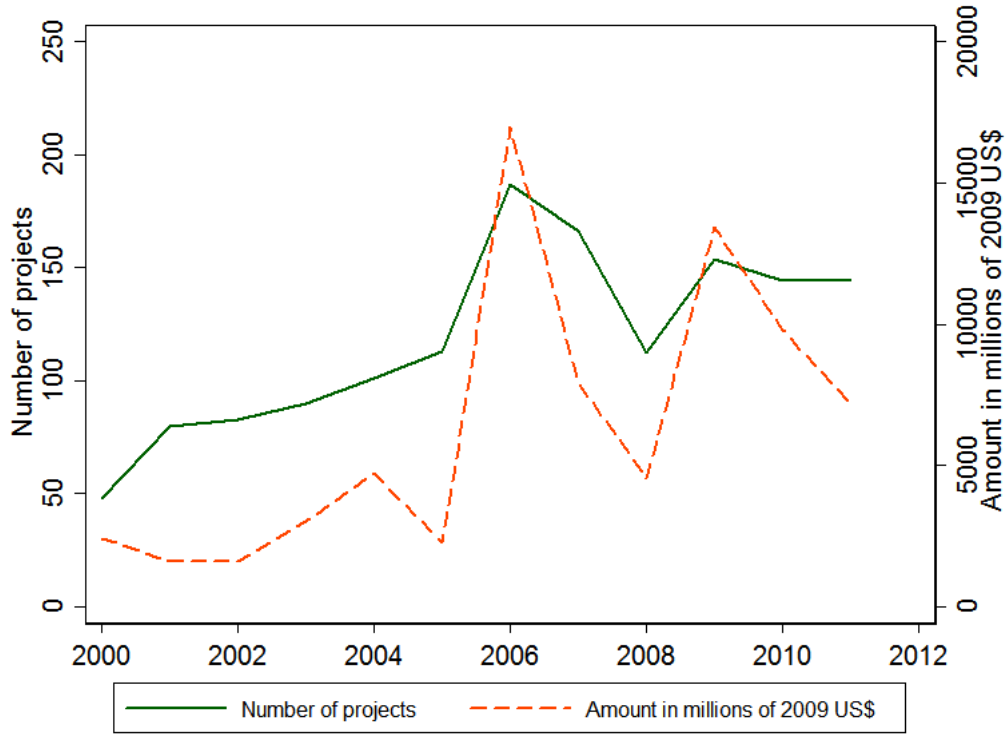
In what follows, we analyze the remaining 1,422 projects to 50 recipient countries that have reached at least commitment stage. 62% of the projects provide information on the amount of official finance committed, totaling US\$ 75.4 billion. Note that this includes all financial flows that can be classified as either ODA-like or OOF-like, including Vague Official Finance. Figure 3 shows the yearly number of projects and dollar amounts over the study period. As shown in the figure, these two measures of China's official finance to Africa are highly correlated ($\rho=0.87$) and show an increasing trend over time.³⁹ In 2000, we were able to identify 48 projects (US\$ 2.4 billion), and by 2010 we found about three times these numbers and amounts: 144 projects (US\$ 9.8 billion). Note that the numbers for 2011 may

³⁸ As noted by Bräutigam (2009: 49), many "plump promises" reported in the media never materialize. By excluding pledges and focusing on flows that have at least reached the commitment stage, we follow a common practice in aid statistics and in empirical analyses on aid.

³⁹ For those projects where we have information on the monetary value, the average Chinese official finance project is worth US\$ 122 million. By comparison, the average project financed by the United States in Africa from 2000-2010 was US\$ 1.9 million, and the average over all DAC donor commitments was US\$ 1.4 million (analysis undertaken using the AidData research release 2.0, found online at <http://www.aiddata.org/content/index/Research/research-datasets>.) However, we expect our average estimate for Chinese projects to be inflated, as our methodology to track aid flows is more likely to miss smaller rather than larger projects.

be lower as a result of limited accumulated media information compared to previous years. The number of projects from more recent years is likely to increase in future updates of this database as more information becomes available.⁴⁰

Figure 3. Chinese official finance reported over time, 2000-2011



Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

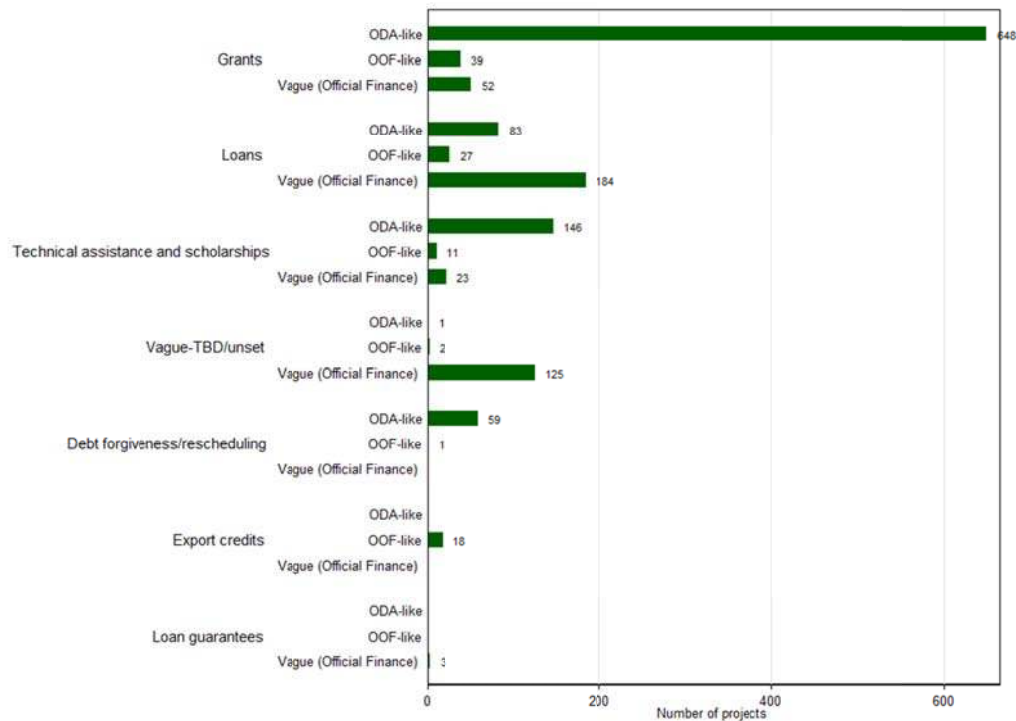
The plurality of the projects included in our data are in-kind contributions (25%), although these projects typically have smaller monetary values and amount to only 3% of the total dollar amount tracked. The second-largest category covers monetary grants (excluding debt forgiveness, 23% of projects), followed by loans (excluding debt rescheduling, 21%), free-standing technical assistance (8%), scholarships and other training (4%), vague grants (4%), and debt forgiveness (4%).⁴¹ Within these flow types the likelihood that the monetary value

⁴⁰ Note, however, that the amount of detail available for flows to particular countries varies considerably. Figure A-1 in the Appendix shows the share of projects per country where we lack information on the monetary value of the projects. This figure reveals that our data are most complete for Somalia and Libya, where all (seven and, respectively, two) projects provide details about financial flows, and least complete for South Africa, with almost 90 percent of the (24) projects not providing information about corresponding monetary values. Also note that 30 percent of the projects remain in the commitment stage, while 51 are completed and 19 percent are ongoing. The monetary value corresponding to these projects amount to 29 percent, 15 percent, and 56 percent of all aid flows, respectively.

⁴¹ The corresponding shares in US dollars are 6% (monetary grants), 70% (loans), 0.23% (free-standing technical assistance), 0.002% (scholarships), 0.32% (vague grants), and 5.4% (debt forgiveness). Grants are coded

of a project is reported varies substantially. For example, 91% of loan projects have a reported monetary value, while only 8% of the (supposedly cheaper) projects labeled as “Scholarships/training in the donor country” have an dollar amount.

Figure 4. Number of Chinese projects by type of flow, 2000-2011



Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

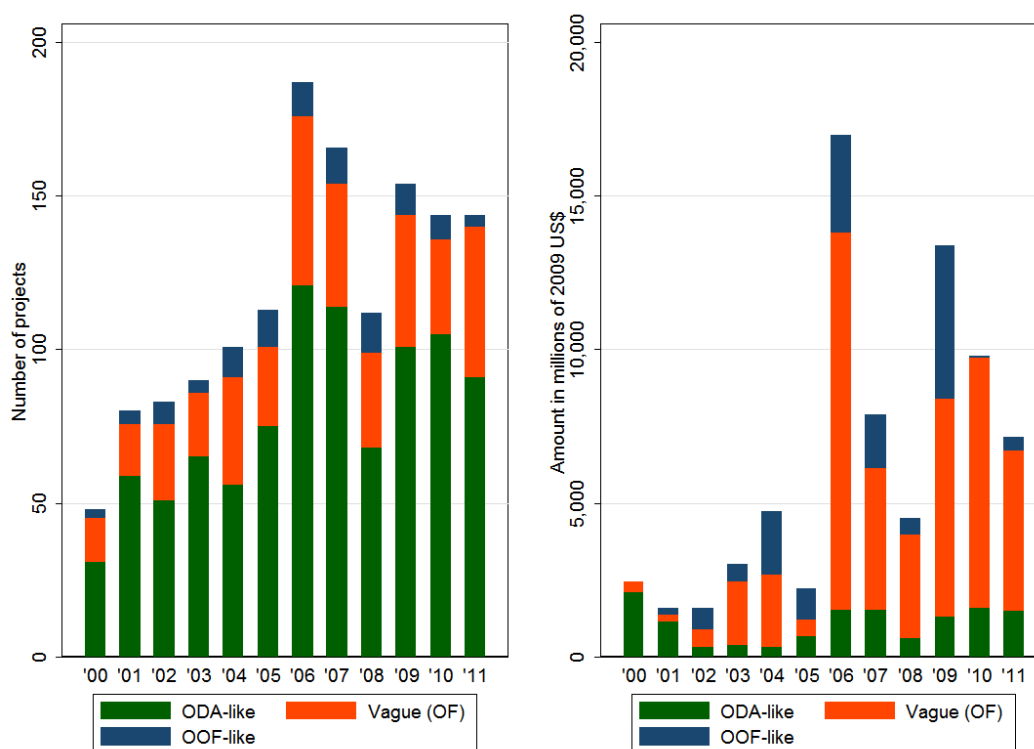
Figure 4 shows the allocation of these projects according to the nature of the financial flow. We distinguish between ODA-like projects, OOF-like projects, and Vague Official Finance. Vague Official Finance refers to projects that are clearly either ODA or OOF, but for which the available information is insufficient to assign projects to one category or another. A good example of a project classified as Vague Official Finance is a concessional loan to Sierra Leone’s telecommunication company, Sierratel, for US\$ 16.6 million (project ID 53). In cases like this one where the degree of concessionality is unknown, we code projects as Vague Official Finance, rather than ODA-like or OOF-like.⁴² As can be seen from Figure 4, the largest category in terms of project numbers is ODA-like grants (648 projects, amounting to US\$ 5,014 million). This category includes, among many other things,

as “grants (vague)” if the corresponding media reports lack information on whether the grant was provided in kind or in cash.

⁴² We apply the same coding procedure when donor intent is unclear.

donations of agricultural machinery and food aid.⁴³ We count 39 OOF-like grants and 52 grants coded to be vague due to insufficient information. Loans are also of quantitative importance. We classify 83 loans as ODA-like (amounting to US\$ 3,642 million), 27 as OOF-like (US\$ 10,864 million), and 184 as Vague Official Finance (US\$ 37,924 million). There are thus a significant number of loans for which we have no detailed financial information that prevents us from coding them as either ODA-like or OOF-like. Sixty projects—59 of them coded as ODA-like—are classified as debt relief (debt rescheduling agreements and debt forgiveness). An additional 180 projects are classified as technical assistance and scholarships (146 of which receive the ODA-like designation). Although small in terms of project numbers, export credits are important in terms of their monetary value (US\$ 4,410 million).

Figure 5. Chinese official finance over time by flow class, 2000-2011



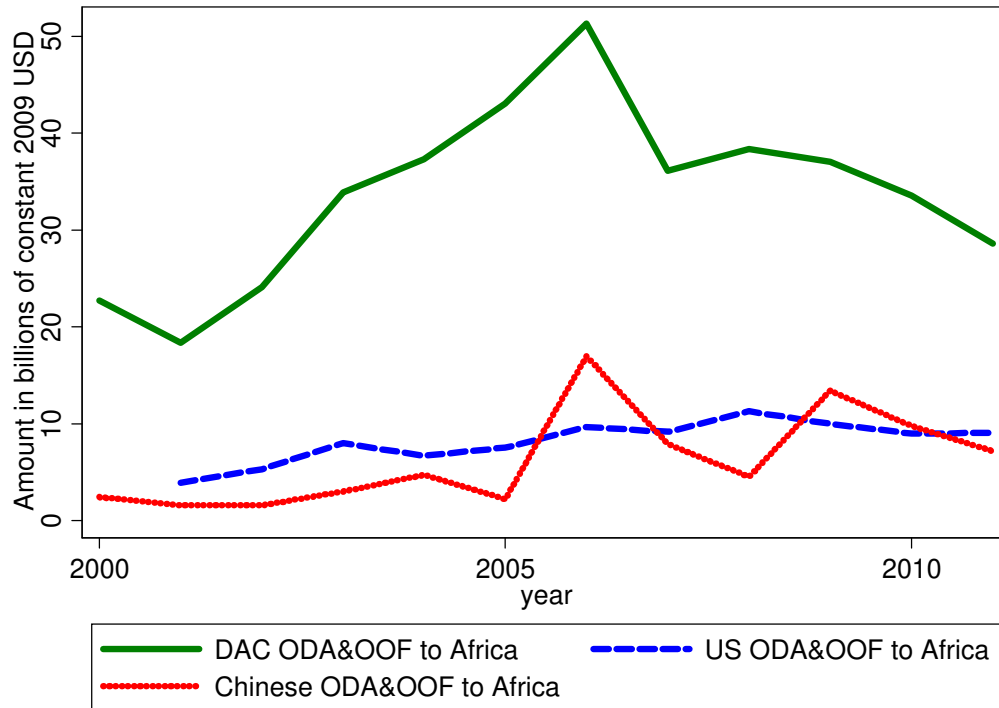
Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

Figure 5 shows the development of the number of projects and official finance flows in US dollars tracked by MBDC over time, separating ODA-like, OOF-like, and Vague Official

⁴³ For example, in 2002, the Chinese government donated equipment, including eight walking tractors, 20 diesel engines, and 20 maize crushers worth 5 million KES to Kenya (Project ID 1029). In the same year, Zambia received a donation from the Chinese government of 4,500 tons of maize as food relief, reacting to a grain shortfall (Project ID 2128).

Finance projects. The figure shows an increasing trend in both project numbers and monetary values in ODA-like projects and vague official finance. The projects that can be clearly identified as OOF-like do not show a clear upward trend. This is most likely due to the high information requirements to identify a project as OOF-like. Much of the increase in vague official finance should be due to OOF-like flows.

Figure 6. Chinese, OECD-DAC, and US Official Flows over time, 2000-2011



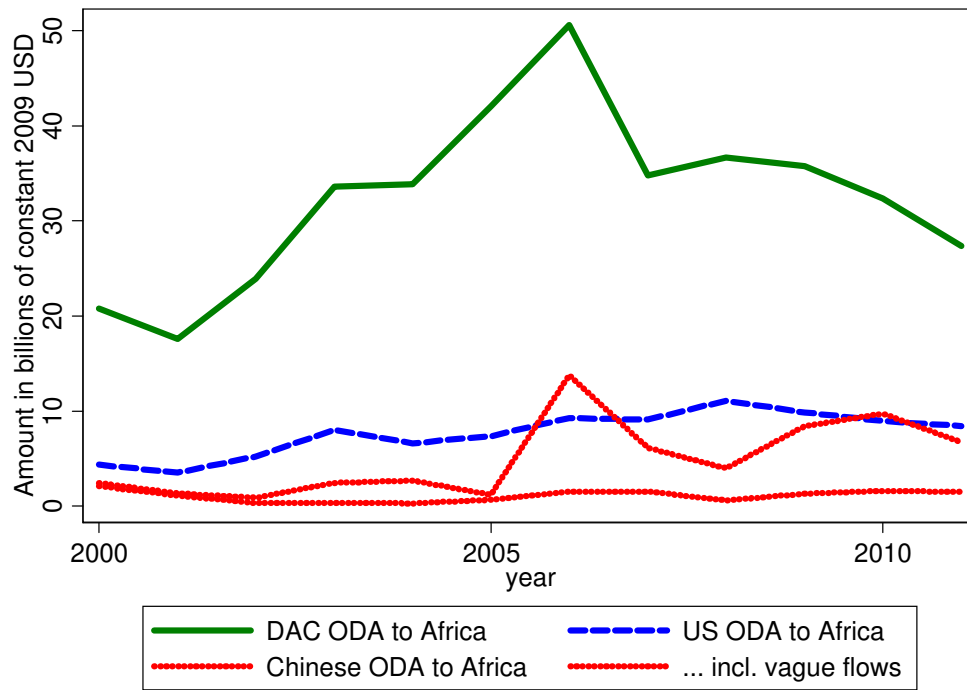
Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0 and OECD DAC Creditor Reporting System

Given the interest in China's role in Africa vis-à-vis Western donors, we also compare annual official financing flows from China with those from the United States and the entire OECD-DAC (Figure 6).⁴⁴ These figures include the DAC categories of ODA and OOF in order to roughly match categories of Chinese official financing. Figure 6 demonstrates that in the early-2000s China was already providing almost the amount of official financing to Africa as the United States. At the peak in 2006, China was providing almost two times the amount of total U.S.-ODA and -OOF, and about 1/3 of the ODA and OOF to Africa from

⁴⁴ As mentioned above, our measure of Chinese official flows includes pipeline (commitments), implemented, and completed projects that received either the ODA-like, OOF-like, or Vague Official Finance designation. While admittedly imperfect, we believe this measure provides a reasonable approximation for official *commitments* from the Chinese Government.

the entire OECD-DAC combined. All three trend upward over time. Chinese financing flows to Africa can vary dramatically from year to year, often due to megadeals: multi-million dollar financing packages for large infrastructure projects or other loans. The dramatic spike in 2006 is due to a large sum of Chinese megadeals; six projects were valued at over US\$ 500 million each, including large loans to Nigeria and Mauritania. Over the entire 2000-2011 period, China committed US\$ 75 billion in official flows to Africa, which is almost a fifth of the total OECD-DAC flows (US\$ 404 billion) and almost as much as committed by the United States (US\$ 90 billion).

Figure 7. Chinese, OECD-DAC and US ODA over time, 2000-2011



Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0 and OECD DAC Creditor Reporting System

Figure 7 restricts the analysis to Chinese and Western flows of official development assistance (or what we call ODA-like flows). This paints a similar picture: Chinese ODA flows to Africa have been lower than those of Western donors, if we focus on the amounts of ODA that we have identified with some confidence. Over the entire decade China committed US\$ 13 billion in ODA to Africa, which is about 3% of the total OECD-DAC ODA flows (US\$ 389 billion) and more than 14% those of the United States (US\$ 92 billion). However, an important caveat here is that our estimates of Chinese ODA are likely significantly devalued since a substantial chunk of Chinese ODA finance is labeled as “Vague Official Finance.” These projects are cases that we are able to classify as official Chinese finance but do not have enough information to discern whether a project should be considered as OOF or ODA. Figure 7 includes these flows as a separate item for

comparison. In 2006, these combined flows exceed ODA by the United States, and stay at comparable levels thereafter.

It should also be noted that as the dataset is missing financial values for 38% of Chinese projects, these project amounts are not captured in the comparative analysis. Thus, dollar amounts of Chinese Official Finance and ODA are both likely to be undercounted in comparison to OECD-DAC and US figures.

Which sectors receive the most projects? Figures 8 and 9 turn to the sectoral allocation of China's official projects in Africa. While we lack sufficient information on many projects (11.5% of all projects tracked), the most important sector according to DAC purpose codes is Government and Civil Society (Figure 8), with an overall number of 191 projects, amounting to US\$ 1,524 million. While it might seem surprising at first that China is so active in this sector, some of Beijing's activities differ much from Western donors. Whereas DAC activities in this sector include strengthening public financial management systems, supporting anti-corruption institutions, and a wide variety of "good governance" initiatives, Chinese support to the sector includes, among other things, the construction of presidential estates and executive office suites.⁴⁵ Health (174 projects), Education (136), and Transport and Storage (103) are on the following places. Examples of projects in these sectors include support for the creation of a China-Liberia malaria prevention center (Health); scholarships for Zimbabweans to undertake undergraduate and postgraduate studies in China (Education); and the rehabilitation of the Kigali road network in Rwanda (Transport and Storage). In terms of monetary amounts (Figure 9), transport and storage projects dominate (US\$ 16,673 million). With US\$ 14,702 million, Energy Generation and Supply is almost as important. These sectors are also outstanding in terms of project size. The largest average size in monetary values have projects in Energy Generation and Supply (US\$ 300 million), followed by Other Multisector (US\$ 260 million) and Transport and Storage (US\$ 214 million). At the bottom of the list, two projects each are classified under Support to NGOs and Women in Development.⁴⁶ MBDC could not track a single project in the sector "General environmental protection."⁴⁷ Figure A-3 in the Appendix shows the number of projects allocated to sectors over time.

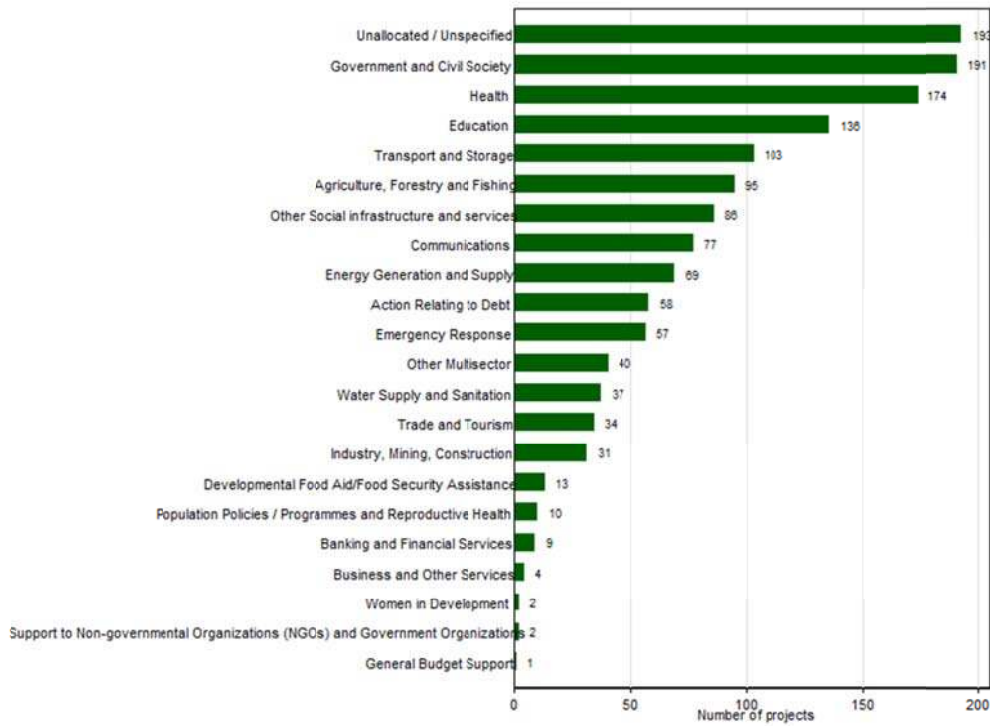
Figures A-4 and A-5 in the Appendix report the sectoral distribution of Chinese ODA for comparison. As can be seen, the largest number of Chinese aid projects is in the health sector (149 projects accounting for US\$ 676 million), followed by Government and Civil Society (133, US\$ 170 million), Education (103, US\$ 71 million), and Agriculture, Forestry,

⁴⁵ Projects carried out by China include judicial training in Angola, the renovation of the Ministry of Foreign Affairs in Liberia, the construction of the National Assembly building in the Seychelles or a financial contribution to facilitate the last phase of the Somali National Reconciliation Conference.

⁴⁶ Specifically, the Chinese Embassy in Harare donated in 2006 teaching equipment to the Women's University in Africa of Zimbabwe to promote gender equality and empowerment and also supported the Malawian Ministry of Women and Child Development in 2009.

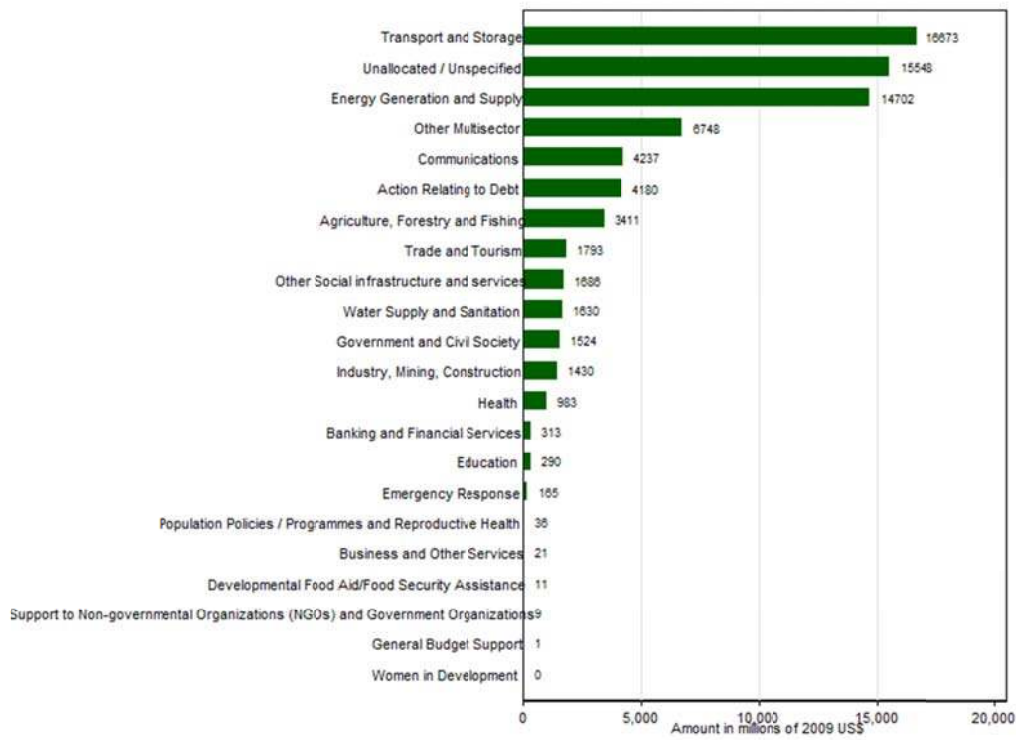
⁴⁷ Furthermore, MBDC tracked only two official Chinese projects in "support to NGOs" (CRS code 920) and two official projects in "general budget support" (CRS code 520).

Figure 8. Number of Chinese projects by sector, 2000-2011



Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

Figure 9. Monetary amount of Chinese official finance by sector, 2000-2011



Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

Table 2. List of Chinese Megadeals (in millions of US\$), 2000-2011

Recipient	Year	Project	Flow Class	Flow	Status	Value
Ghana	2010	China grants \$6b concessionary loan	Vague (OF)	Loan	Implementation	5485
Nigeria	2006	Infrastructure in exchange for preferential oil right bidding	Vague (OF)	Vague-TBD	Pipeline: Commitment	5383
Mauritania	2006	\$3 Billion Loan for oil exploration, sewage systems, iron mine, road	Vague (OF)	Loan	Pipeline: Commitment	4037
Ghana	2009	\$3B USD loan from China Development Bank for oil project, road project, others	OOF-like	Loan	Implementation	3000
Equatorial Guinea	2006	\$2b oil-backed loan	OOF-like	Loan	Completion	2692
Ethiopia	2009	Concessional Ex-Im Bank Loan for Dam Construction	Vague (OF)	Loan	Pipeline: Commitment	2249
South Africa	2011	Financial Cooperation Agreement	Vague (OF)	Loan	Pipeline: Commitment	2072
Africa, regional	2000	\$1 billion of African debt cancelled; may not be bilateral	ODA-like	Debt forgiveness	Completion	1697
Angola	2004	Phase 1 of National Rehabilitation Project	OOF-like	Loan	Implementation	1507
Madagascar	2008	Construction of hydroelectric plant	Vague (OF)	Loan	Pipeline: Commitment	1421
Sudan	2007	Construction of railway from Khartoum to Port Sudan	OOF-like	Export credits	Completion	1377
Angola	2009	Agricultural development	OOF-like	Loan	Implementation	1200
Zimbabwe	2004	ZESA Secures Funding for Lake Kariba Power Plant	Vague (OF)	Loan	Pipeline: Commitment	1010
Zambia	2010	Chinese firm to build Kafue Gorge power plant (2010 commitment)	Vague (OF)	Loan	Implementation	930
Sudan	2003	Construction of the Merowe hydroelectric dam	Vague (OF)	Loan	Completion	836
Mauritius	2009	East-West Corridor, Ring Road, Bus Way, and Harbour Bridge	Vague (OF)	Loan	Implementation	782
Cameroon	2009	Loan for water distribution project	Vague (OF)	Loan	Implementation	775
Mozambique	2009	China builds Agricultural Research Center/Agriculture Station	ODA-like	In-kind Grant	Completion	700
Cameroon	2003	Memve'ele Dam	Vague (OF)	Loan	Implementation	674
Nigeria	2006	Light Rail Network	Vague (OF)	Loan	Implementation	673

Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

and Fishing (71, US\$ 981 million). In terms of volume, Actions Related to Debt (US\$ 4,166 million) and Transport and Storage (US\$ 2,392 million) account for the largest numbers. The sectoral distribution of Chinese aid to Africa stands in contrast to the pattern of behavior observed among DAC donors and most multilateral donors controlled by DAC governments. Over the last decade, Western donors have channeled the lion's share of their funding (nearly 50%) into social and humanitarian sectors (Lyne et al. 2009; OECD 2012). This lends some degree of support to the notion that Chinese aid is complementary to assistance from Western donors (Moss and Rose 2006).

Table 2 shows the 20 largest projects in our sample by commitment size. Very large projects with project size of US\$ 1 billion are often called “megadeals.” 13 projects in our sample would fall under this definition. Consistent with conventional perceptions in the literature, we observe a large number of loans as well as many projects in the infrastructure and energy sectors in this sample.⁴⁸ The largest project is a credit package signed between China and Ghana in 2010. The project is financed by the Chinese Exim Bank, with US\$ 6 billion in funding for ancillary energy infrastructure, education, sanitation, and agricultural development. In return, the Ghanaian government agreed to provide 13,000 barrels of crude oil daily for 15 years. The second largest megadeal is funding for infrastructure to Nigeria in exchange for four oil drilling licenses for China National Petroleum Corporation (CNPC). CNPC will reportedly be first offered rights for exploration and drilling on four separate oil blocks. No information has been tracked that this project has already been implemented. Third is an October 2006 loan from the Exim Bank to Mauritania, in exchange for iron and oil guarantees, and fourth is a US\$ 4 billion deal from the Exim Bank to Ghana for a railway line linking Kumasi in the south to Paga in the north. Of course, as the projects in this list exemplify, it is still not clear to what extent, if at all, some of the largest Chinese-financed projects reported in Africa have been moved from the commitment to the implementation stage.

Table 3 outlines the ten largest recipients of official finance from China, the United States, and the OECD-DAC as a whole, aggregating flows from 2000-2011. Three of the top ten recipient countries are consistent across all three donors: Nigeria, Sudan, and Ethiopia.⁴⁹ A number of countries may not make the top ten lists for all three donors, but still receive a significant amount of finance from China and the DAC. For instance, Ghana is first on the list for China, and although it is not in the top ten for the US or DAC it is a very large recipient of Western funding as well (Ghana takes the 11th spot on the DAC recipient list and the 12th spot for the US). Others, such as Mauritania and Zimbabwe, are more notable exceptions as they are top recipients of Chinese official finance but not of DAC flows. An

⁴⁸ All detail on megadeals is sourced from AidData's *Chinese Official Finance to Africa Dataset, Version 1.0*. Original links to news stories and media reports are available in the database for each project. An average of 5.55 online sources is provided.

⁴⁹ South Sudan is counted as a separate country in the dataset after its independence in 2011. Thus, Sudan here includes finance to North and South from 2000-2010 and only the North in 2011.

aggregate comparison across all three donors suggests that a large percentage of both Chinese and Western official financial flows go to many of the same governments and

Table 3. Ten largest recipients of Official Finance to Africa (ODA and OOF), 2000-2011

China	United States	DAC
Ghana (\$11.4B)	1. Egypt (\$7.6B)	1. Nigeria (\$28.8B)
Nigeria (\$8.4B)	2. Ethiopia (\$6.9B)	2. DRC (\$21.9B)
Sudan (\$5.4B)	3. Sudan (\$6.8B)	3. Tanzania (\$19.6B)
Ethiopia (\$5.4B)	4. DRC (\$5.8B)	4. Mozambique (\$17.9B)
Mauritania (\$4.6B)	5. Kenya (\$5.5B)	5. Egypt (\$16.5B)
Angola (\$4.2B)	6. Nigeria (\$4.2B)	6. Ethiopia (\$16.1B)
Zimbabwe (\$3.8B)	7. South Africa \$3.6B)	7. Kenya (\$14.6B)
Equatorial Guinea (\$3.8B)	8. Uganda (\$3.5B)	8. Sudan (\$14.0B)
Cameroon (\$3.0B)	9. Tanzania (\$3.4B)	9. Morocco (\$12.6B)
South Africa (\$2.3B)	10. Mozambique (\$3B)	10. Uganda (\$12B)

Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0 and OECD DAC Creditor Reporting System.

regions in Africa. However, it does mask differences in the modalities and sectors of funding. Although Sudan is a top recipient from all three donors, the types of funding are vastly different; China has had a large focus on the oil pipeline and infrastructure in the eastern corridor whereas DAC donors have largely concentrated funding in social sectors and conflict regions such as Darfur.

Figures 10 through 13 visualize the distribution of Chinese official finance to Africa from 2000 to 2011 and yield several useful insights. Figure 10 plots each country's share in the total number of China's official projects in Africa. Ten African states individually received at least 3% of all Chinese official finance projects to Africa from 2000-2011. Only two of these countries (Ghana and Liberia) are situated in West Africa, while the rest are all either in

Eastern or Southern Africa. Over the entire 2000-2011 period, Zimbabwe received the largest number of projects (104), followed by Ghana (64), Liberia (59), Kenya (58), Sudan (55), and Ethiopia (54). The fewest number went to Libya (2), South Sudan (4), Chad (6), Benin, Cape Verde, and Somalia (7 each). Since South Sudan was not an independent country until 2011, it is not surprising that the young country has received such a small number of projects over our study period. Also, it is not surprising that we did not track any Chinese official project in Burkina Faso, Swaziland, the Gambia, and São Tomé and Príncipe between 2000 and 2011. None of these countries maintain diplomatic relations with the PRC. Figure A-2 in the Appendix shows China's allocation of projects by country over time. Flows of Chinese official finance are spread relatively evenly across the African continent.

In terms of the financial value of Chinese official finance, Figure 11 illustrates that coastal states have received the lion's share of Chinese official finance. All of the largest recipients of Chinese official finance from 2000-2011 are littoral states, save for Zimbabwe and Ethiopia, and neither of these states are located far from main international maritime transit

corridors. Ghana, Nigeria, Sudan, Ethiopia, Mauritania, and Angola are the six largest recipients of Chinese official finance from 2000-2011. These six recipients received more Chinese official finance over the sample period than all other countries combined. The largest recipient of Chinese official finance has received US\$ 11,431 million alone.

Finally, Figure 13 shows China's official finance by recipient country as a share of the recipient's gross national income (GNI). This measure is a commonly used indicator for aid dependency. In general, Chinese official finance does not tend to be particularly high compared to African countries' economic size. There are a few exceptions such as Mauritania (12.7%), Equatorial Guinea (5.7%), Ghana (5.3%) and Zimbabwe (4.1%). Given the increasing trend of Chinese activities in Africa, this is likely to change in the foreseeable future.

To sum up, several important observations can be made about 21st-century Chinese official finance to Africa. First, with respect to the geographic distribution of China's official finance, we find that China's activities are spread all over the African continent. Only countries recognizing Taiwan do not show up among China's recipients of official finance flows. According to the dollar amounts tracked, the largest recipient appears to be Ghana followed by Nigeria and Mauritania. Second, with respect to the sectoral distribution, we find that China is active in almost all sectors, with "General environmental protection" being a notable exception. While conventional wisdom that infrastructure plays an important role has been confirmed by the MBDC approach, the sector "Government and Civil Society" plays a very important role in terms of project numbers. Unsurprisingly in the Chinese case, projects in this sector are about "Government" and not "Civil Society. Third, with respect to the trend over time, Chinese activities as a financier of development activities are increasing and are by today roughly comparable to the size of activities provided by the United States. When looking at ODA-like flows exclusively, however, China still is clearly behind the United States.

Figure 10. Percentage of China's official projects to Africa by recipient country, 2000-2011

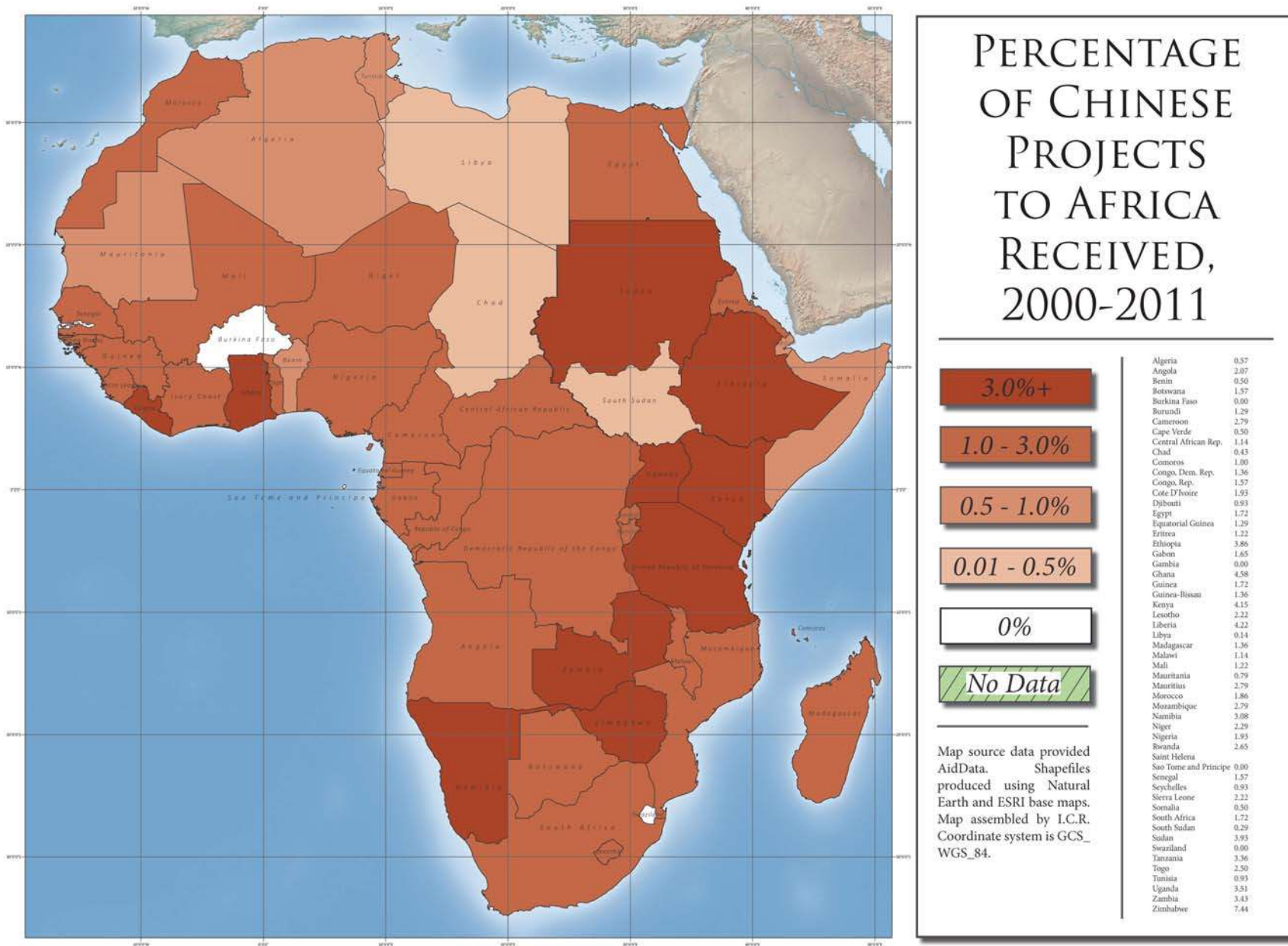


Figure 11. Percentage of China's official finance to Africa by recipient country, 2000-2011

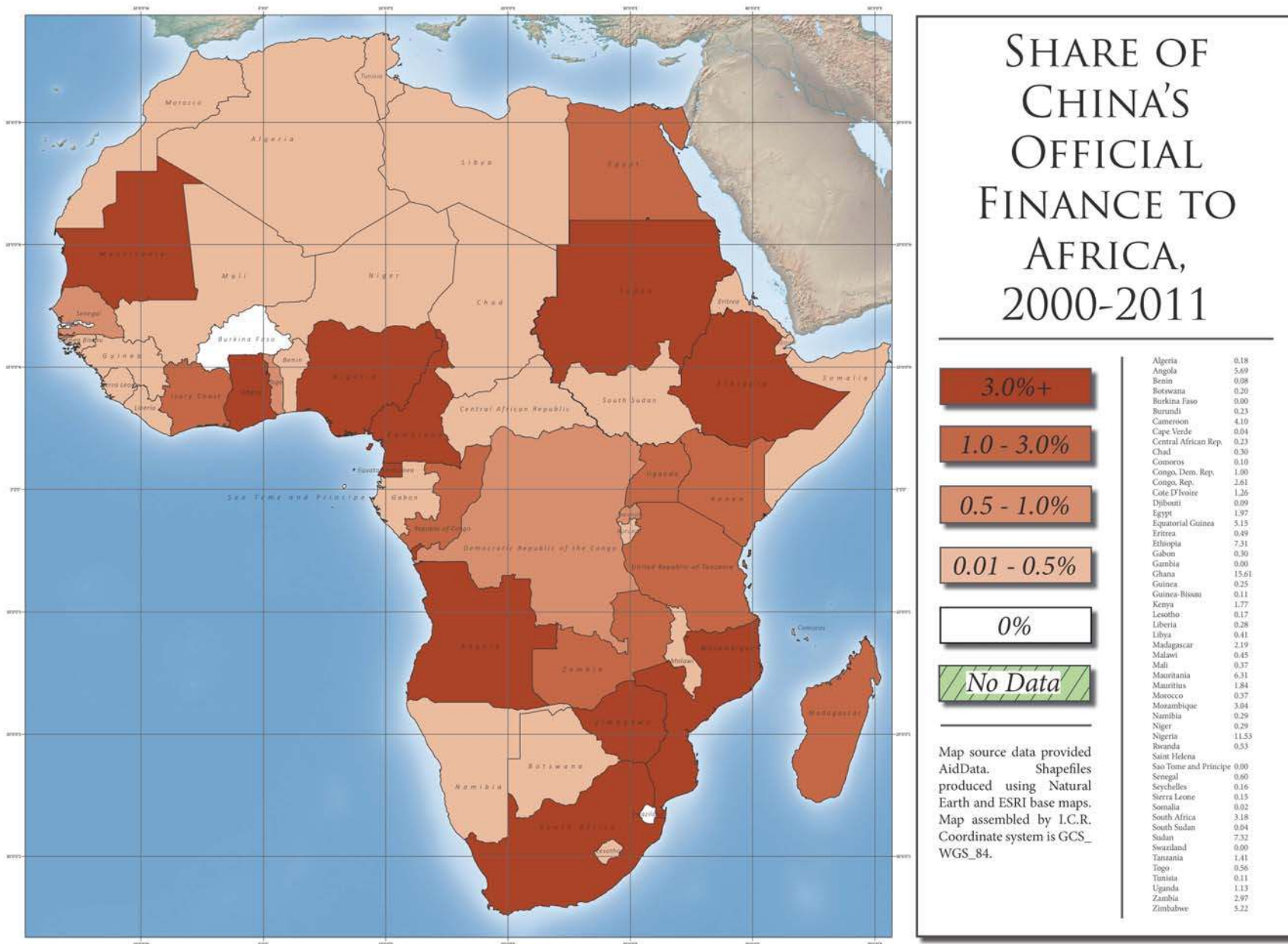


Figure 12. Percentage of total OECD-DAC ODA and OOF (excluding export credits) to Africa by recipient country, 2000-2010

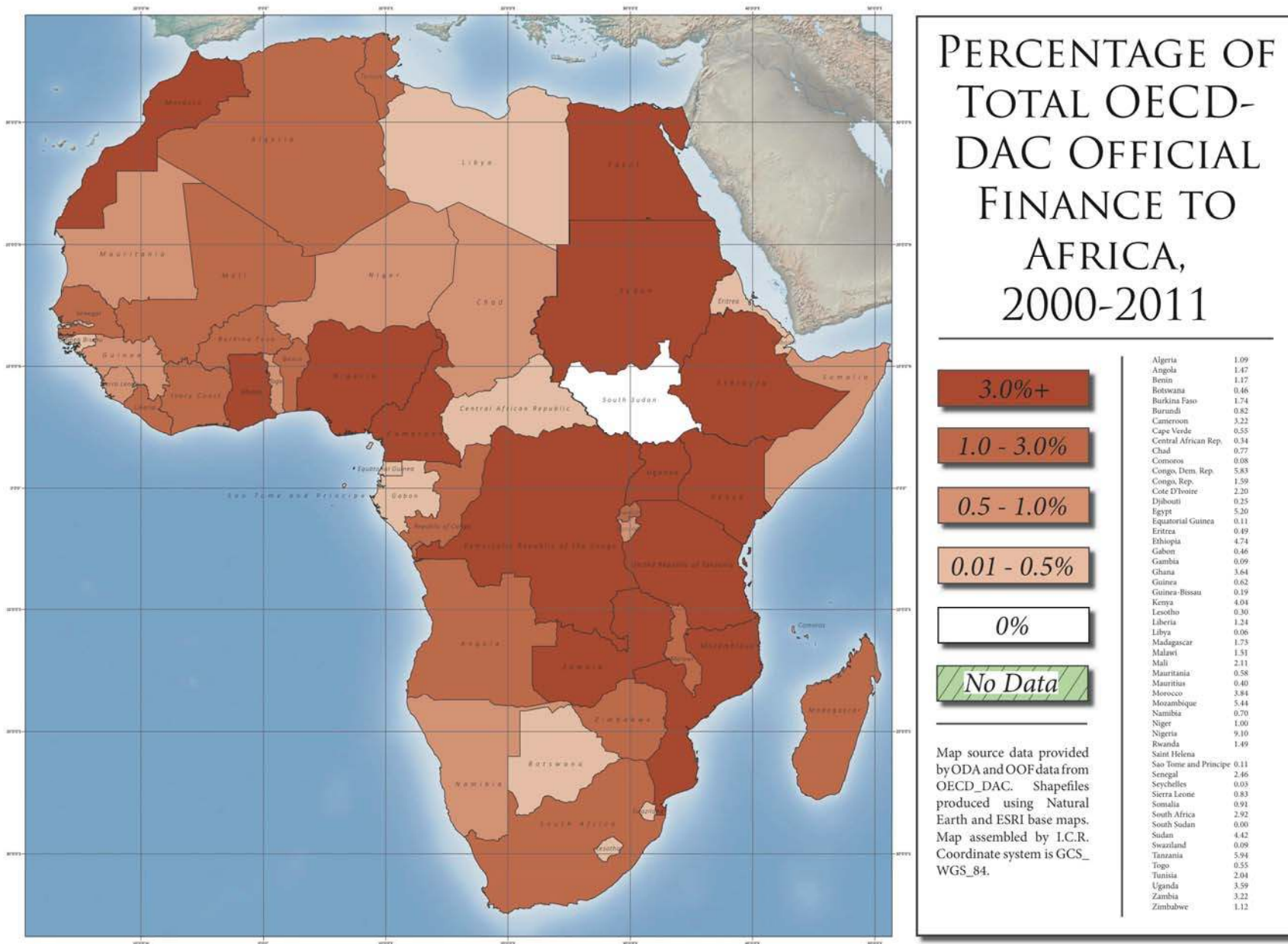
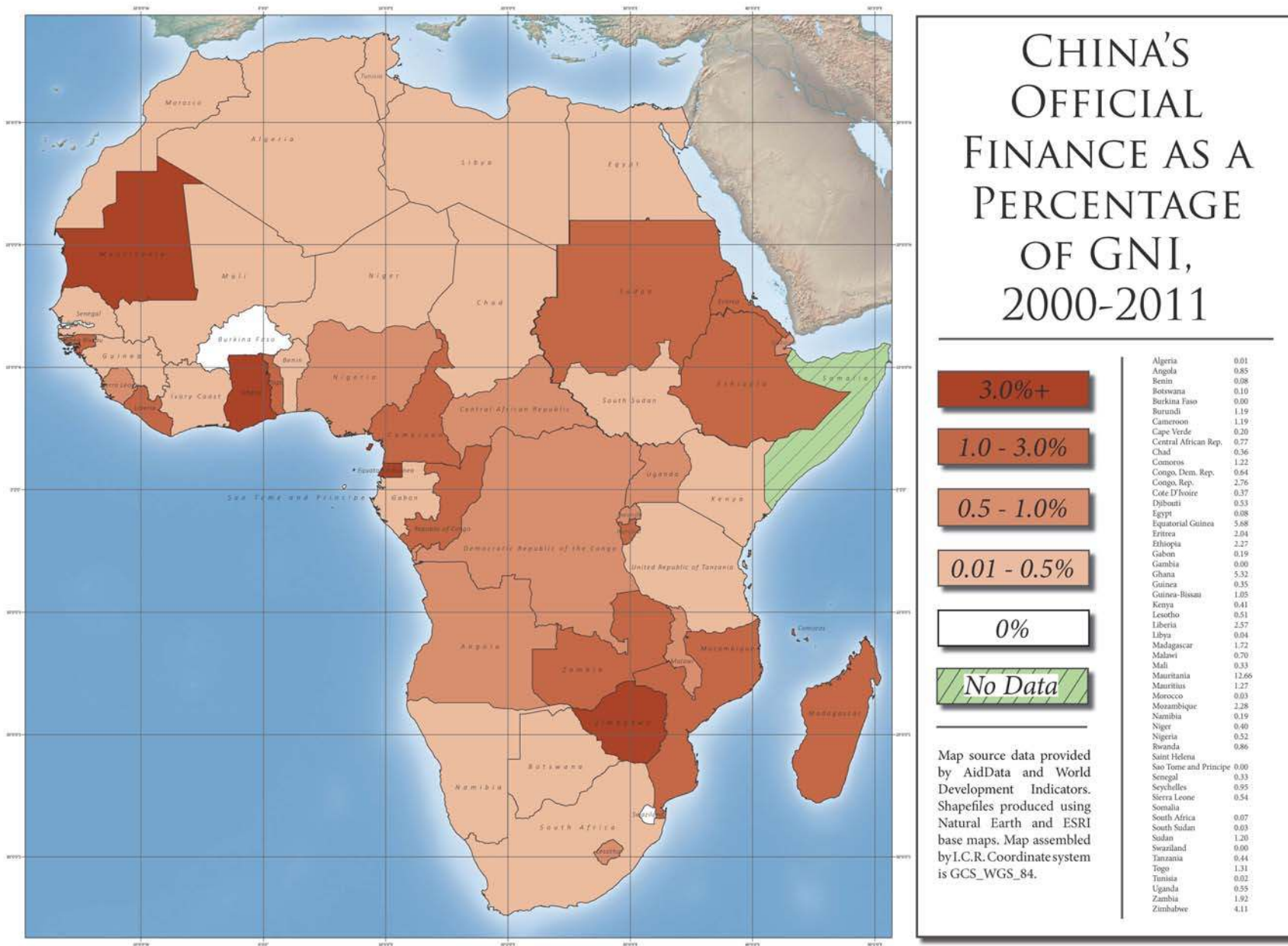


Figure 13. China's official finance to Africa by recipient country as percentage of GNI, 2000 – 2011 average



7. Sizing Up MBDC to Existing Data Sources on Chinese Official Finance

In order to preliminarily gauge the comprehensiveness of our data, we compared the records contained in *AidData's Chinese Official Finance to Africa Dataset, Version 1.0* with four existing data sources of Chinese official finance. First, to determine the extent to which our data match the (admittedly limited) data on Chinese aid from official sources, we cross-checked our project records with the project records reported in China's MOFCOM Yearbooks from 2000-2005 (with the exception of 2002 when no data were reported).⁵⁰ Matching our data to MOFCOM Yearbooks proved difficult, as the Yearbooks report project completion years while our database records project commitment years and then follows up on whether projects have been implemented and/or completed. As such this is was a highly imperfect matching exercise. That said, the results from the matching exercise suggest that our database contains more projects listed in MOFCOM Yearbooks for more recent years. This makes sense because commitment years for earlier projects have a higher probability of occurring before 2000—our data collection cut-off date. We matched 6% of MOFCOM projects completed in 2000, 27% in 2001, 50% in 2003, 62% in 2004, and 50% in 2005. This excludes cases in which not enough information was available to discern whether a match existed.

Second, we cross-checked our database with humanitarian aid data recorded in the Financial Tracking Service (FTS). Managed by the UN Office for Coordination of Humanitarian Affairs (OCHA), FTS data are provided by donors and/or recipient organizations.⁵¹ It appears that our database contains substantially more reported Chinese humanitarian assistance activities in Africa than FTS for the period 2000-2011. FTS contains 26 humanitarian assistance project records that would plausibly meet our database inclusion criteria. These are cases of Chinese assistance to Africa that fall within the 2000-2011 time range. Of these 26 records, there are 7 for which the available information is insufficient to determine whether or not a match exists between our dataset and the data contained in FTS. Of the remaining 19 FTS records, 13 (68%) can be matched to a specific project in our dataset. While our data do not match up perfectly to FTS, the evidence suggests that we are collecting more comprehensive and detailed Chinese humanitarian assistance data than FTS. Our dataset contains 86 official finance projects coded as “Developmental Food Aid/Food Security Assistance” and “Emergency response.”

Third, we have compared *AidData's Chinese Official Finance to Africa Dataset, Version 1.0* with the Food Aid Information System (FAIS), an online database provided by the UN World Food Programme (WFP) that tracks international food aid flows.⁵² Results were mixed. On one hand, we found that FAIS reported over 40 recipient-year pairings with food aid from

⁵⁰ Data are available at <http://www.aiddata.org/content/China-foreign-aid>.

⁵¹ Data are available at the OCHA website. See <http://fts.unocha.org/>.

⁵² Data are available at <http://www.wfp.org/fais/>.

China that did not exist in our database. But we also found 10 pairings in our dataset that were not in the FAIS database. There were over 10 pairings that showed up in both databases. However, there are two important disclaimers to be made about this comparison. First, similar to FTS, FAIS tracks completed projects, in the form of food aid deliveries. Our dataset starts with project announcement dates. Thus, while food aid projects are more likely to be completed in the same year they are announced, we are, in a sense, making apples-to-oranges comparisons.⁵³ Second, FAIS does not provide data for 2010 and also only reports Chinese food aid to 30 African states, excluding a substantial number of recipients for which AidData has food aid records. The AidData-FAIS matching results suggest that our methodology may not be as effective for collecting food aid data as it is for tracking Chinese foreign aid in other sectors. But FAIS also seems to suffer from substantial data gaps in reporting Chinese food aid to African countries since 2000. Taken together, these comparisons with MOFCOM Yearbooks, FTS and FAIS suggest that media-based data are no substitute for official data but a viable second-best solution, particularly when official data are largely incomplete.

Fourth, we cross-checked a database of incoming aid flows managed by Malawi's Ministry of Finance. Malawi's Aid Management Platform contains data from 30 donor agencies and US \$5.3 billion in commitments (current USD), representing approximately 80% of all external funding reported to the Ministry of Finance since 2000. Out of 2584 projects in the AMP Malawi database, only two records (2008 and 2009 project) list the People's Republic of China as the donor entity, totaling \$163 million (current USD). Both of these projects are included in *AidData's Chinese Official Finance to Africa Dataset, Version 1.0*.⁵⁴ However, our dataset includes 14 additional Chinese official finance projects in Malawi, totaling US\$ 164.8 million in commitments. Collectively, these projects double the amount of recorded commitments of Chinese official finance in Malawi. This cross-checking exercise not only calls attention to the incomplete nature of the data in Malawi's Aid Management Platform, but also to the fact that donors that do not publish project-level data, such as China, are likely responsible for a substantial proportion of unreported external funds flowing into Malawi. This comparison illustrates the added value of using MBDC as another method to track aid flows in the absence of official project records.

In addition to comparisons with these four official databases, we compare the annual amount of total Chinese aid to Africa, as represented by AidData's media-based data and estimates from previous studies (see again Table 1). *AidData's Chinese Official Finance to Africa Dataset, Version 1.0* contains 937 "ODA-like" project IDs with an aggregate value of US\$

⁵³ In our dataset, 52% of official finance projects in sectors "Developmental Food Aid," "Emergency Response," and "Agriculture, Forestry and Fishing" " have a reported status of "completed," while only 43% of active projects in the entire database have a reported status of "completed."

⁵⁴ The financial value of one of these two projects, the construction of a hotel and business center, differs between records in MBDC China and AMP Malawi. The former reports a value of \$92.3 million, while the latter reports a commitment worth \$63 million (and a cumulative disbursement of \$80.16 million; all values in constant 2009 US\$).

13.0 billion (in constant 2009 US\$). The 937 figure includes projects identified as being in the “Commitment,” “Implementation,” or “Completion” stages, and excludes projects with a status of “Pledge.” This is an average of less than US\$ 1.1 billion of Chinese ODA to Africa per annum during the twelve year study range. This is roughly comparable to previous studies such as Bräutigam (2011b), Wang (2007) and The Economist (2004) that estimated Chinese ODA to Africa to be somewhere between US\$ 1 and US\$ 2 billion for a particular year in our study's time range. Additionally, since this number does not include those projects for which we did not find information that they have reached the commitment stage, it is possible that we are underestimating the actual amount of 21st-century Chinese ODA to Africa since some of these projects may have actually been carried out. More broadly, our database contains 1,422 projects that have been classified as “Chinese Official Finance,” which includes projects labeled as "ODA-like," "OOF-like" and "Vague Official Finance," for a total of US\$ 75.4 billion between 2000-2011, or US\$ 6.3 billion per year. This estimate falls in between previous wide-ranging estimates such as the CRS/NYU Wagner School study that placed 2007 Chinese "aid and related activities" at US\$ 18.0 billion (Lum et al. 2009), and Christensen (2010), who estimated 2009 Chinese "aid" to Africa at US\$ 2.1 billion.

AidData's aggregate estimates must be considered in light of two important caveats. First, our estimates not only include data for completed Chinese aid projects, but also for projects in the “Commitment” stage that have been announced or remain in the preparation/design phase but have not necessarily broken ground, as well as for projects for which implementation is underway but that have not been reported as completed. The total values for Chinese official finance are considerably smaller when we exclude projects that lack information that they have been finalized (US\$ 19.4 billion over the 2000-2011 period) or have at least been started (US\$ 48.6 billion). AidData's online data platform at china.aiddata.org allows users to filter projects and generate aggregate statistics based on the status of a project. Second, 38% of the official finance records in our database lack financial values. It therefore stands to reason that we may have under-estimated Chinese official development flows to Africa in this paper as a result. We hope to fill in as many of these missing financial values as possible in future updates to the dataset.⁵⁵ To obtain more accurate estimations of the total monetary value of China's development finance, future research should elaborate ways to impute missing monetary values of individual projects based on their observed characteristics.

⁵⁵ The previously described web-based platform that allows feedback on projects from recipient governments, journalists, scholars, and other stakeholders is one potential source of information on this and other fields in the database.

8. Conclusions and Next Steps

There is a growing disconnect between the suppliers of global development finance and the international regime put in place by sovereign governments to track development finance activities. While the member states of the OECD-DAC by and large comply with a basic set of data disclosure norms, important non-DAC donors have effectively opted out of the global aid reporting regime. Left unattended, this gap will continue to grow. As some Western governments scale back their development finance commitments, non-Western donors are rapidly expanding their overseas aid activities. The most important provider of official finance to Africa among these non-DAC donor countries is China. Yet many non-DAC donors, including China, lack either the capacity or the political will to provide detailed information about their aid activities. The global aid reporting regime faces a crisis of relevance and legitimacy, and these cracks in the foundation of a voluntary disclosure system developed more than 50 years ago pose a major challenge to scholars and policymakers who seek to understand the distribution and impact of development finance. This paper is the first in a series of efforts to track non-DAC development finance through the application of AidData's MBDC methodology. We have created a public good that we hope will be used—and improved—by researchers, policymakers, and other interested stakeholders to better understand the rapidly expanding field of non-DAC development finance.

Apart from contributing to the literature on Chinese aid, we pursued this project as a proof of concept exercise to test the viability of a media-based data collection approach. We regard this pilot project as a success. The methodology has shortcomings and will no doubt be improved, but its application has uncovered more than US\$ 75 billion in commitments of official Chinese financing flows to Africa that were previously unrecorded—in a single location and with a single, consistent methodology—at the project level. We hope that this database will be used by scholars, policy analysts, journalists, and others to address important policy questions about the distribution and impact of Chinese aid to Africa. However, we also hope that we have demonstrated media-based methods can substantially increase the transparency of aid flows from Iran, Saudi Arabia, Venezuela, Cuba, and many other donors that are not part of the OECD-DAC reporting regime.

Based on insights from previous initiatives tracking Chinese aid and investment flows, we have taken steps to avoid pitfalls of relying on public media reports by crafting a systematic, transparent and replicable methodology and database. All projects in the database are tracked closely over time, and we have taken extra caution to avoid double-counting of projects. We have also attempted to categorize and present our data in a way that enables analysts to include and exclude certain financing flow types, depending on the nature of their inquiry. We harbor no illusions that we will definitively resolve the debate about how to categorize different forms of Chinese (development) finance, but we hope that by disclosing our data and methods we will facilitate productive discussion and perhaps make a modest contribution to the advancement of social science and evidence-based policymaking. Our data collection methodology is publicly available at http://china.aiddata.org/MBDC_codebook. We also encourage users of our database to

scrutinize the data, and provide feedback and alternative sources of information. On the china.aiddata.org platform, users can access a live, interactive version of the database and suggest new sources of information for—or specific changes to—any project record. Users can also add records if they have knowledge, and the corresponding sources, to verify that a Chinese project has been pledged, committed, implemented, and/or completed that is not contained in AidData’s MBDC China database.

Going forward, we intend to continuously update project records in our database based on user feedback, and update our China database to account for development finance flows beyond 2011. Additionally, we plan to improve and expand upon our MBDC data collection efforts, including the China dataset, in the following ways:

1. Vet and refine project records through correspondence with knowledgeable local stakeholders in Africa.

Media-based data are no substitute for official data. But official data also suffer from a set of known shortcomings—e.g., project-level disbursement and implementation information is often missing or inconsistently reported (Strange et al. 2013). To this end, AidData is exploring a range of options for collecting data from policy-makers, development practitioners, journalists, and other local stakeholders in Africa who can vet and enhance the Chinese development finance data with insights from the field. This is in addition to our crowdsourcing platform described above. Our first attempt to crowd-source Chinese development finance data is a dynamic data platform (china.aiddata.org) which allows users to investigate and suggest revisions to individual projects. By searching and filtering through the online data or inputting the unique project ID number, users can access the project page, which includes links to source documents as well as a list of contacts who have some knowledge about the project. The project pages also provide a comment function, where users may offer additional project information, link and upload new project documents, or report potential errors. AidData staff will track and moderate these comments, addressing data quality issues as they arise and integrating verified content into the database. Greater participation by local stakeholders will add tremendous value to this process.

2. Expand Stage One and Stage Two to include more searches in additional languages.

Due to resource constraints, Stage One of this pilot project was carried out entirely in English. Factiva also includes rich media databases in many other languages including Mandarin, French and Portuguese that may potentially yield additional projects and/or richer details for existing projects. During Stage Two a team of three Chinese language experts located Chinese sources for aid projects that were initially identified from non-donor and non-recipient news agencies. However, because of resource limitations it did not utilize language searches in languages other than English and Mandarin. In future iterations of our

data, AidData’s MBDC methodology will include more diverse language searching throughout Stage One and Stage Two.⁵⁶

3. Geocode the precise latitude and longitude coordinates of all projects and analyze the spatial distribution of Chinese development finance.

Later this year AidData will release an updated Chinese development finance database with subnational geocodes. These data will help address a range of questions, such as the degree to which Chinese aid effectively targets areas of need or opportunity and whether Chinese aid is used to curry favor with African political leaders. Among many other applications, researchers can pair geocoded Chinese aid information with other sources of time-varying, subnational data to gauge the impact of Chinese development finance on economic, social, environmental, and governance outcomes.

4. Augment the MBDC methodology to more systematically capture “unofficial” flows from China to Africa.

The methodology that we have employed to track Chinese development finance did not systematically target “unofficial” financial flows from China to Africa, including joint venture projects (with and without Chinese government involvement), foreign direct investment (with and without Chinese government involvement), aid from private and state-owned Chinese corporations, and aid from Chinese non-governmental organizations. Our objective was to track Chinese development finance in African countries. However, we inadvertently identified a large number of these unofficial activities and chose not to discard the data. We instead separated these (incomplete) data from the official development finance records. Given the enormous yield of unofficial activities that were captured, we hope to augment our methodology to enable more systematic tracking of these activities, as they help provide a more comprehensive and accurate picture of the wide range of financing modalities Beijing uses to support economic development in Africa.

⁵⁶ For example, Stage One searches were systematically conducted in English, yielding primary sources in English as well as translations of foreign language media sources. In Stage Two, Google searches in English were supplemented with Baidu searches in Mandarin. However, we recognize these searches may have elided other foreign language media outlets providing valuable project information. For instance, English and Mandarin searches revealed only seven projects in Benin worth US\$ 49 million in total. Preliminary Factiva searches in French revealed eight additional projects in Benin, for a combined total of at least US\$ 40 million. This suggests our initial results are biased against Francophone countries.

The Factiva search French string used was as follows: (Chine or Chinois or Chin*) near5 (Benin or Beninois or Benin* or Porto-Novo or Cotonou) AND (assistance or subvention or prêt or emprunt or concession* or donat* or donneur or donateur or sans intérêt or intérêt or préférentiel or fonds commun or fond or invest* or finance or aide).

5. Collect development finance data for a DAC donor (or donors) using this media-based method.

While AidData's MBDC methodology was designed to address the challenge of missing data from non-DAC donors, application of media-based data collection methods to a DAC donor (for whom we have official project-level data) would help reveal the biases and shortcomings of our methodology. It is easier to correct for biases or weaknesses when they are known.

6. Adapt the MBDC methodology for other forms of non-DAC development finance data collection.

AidData has employed MBDC methods to collect some preliminary data for development finance activities funded by Saudi Arabia and Venezuela.⁵⁷ These pilot exercises have yielded promising results. However, refining these methods to ensure that they are broadly applicable to non-DAC suppliers of development finance will require more time and careful attention to detail and nuance. While AidData researchers created a methodology designed to track aid from multiple donors, our application to the case of China caused us to create particular categories in the official and unofficial sectors that reflected Chinese aid practices. When AidData applies this method to other non-traditional donors, we are likely to discover additional nuances and variation in flows that are not captured by the method presented here. We expect to adapt the method as we learn more about variation in donor practices.

⁵⁷ See details on these initiatives on AidData's blog, *The First Tranche*, available at blog.aiddata.org.

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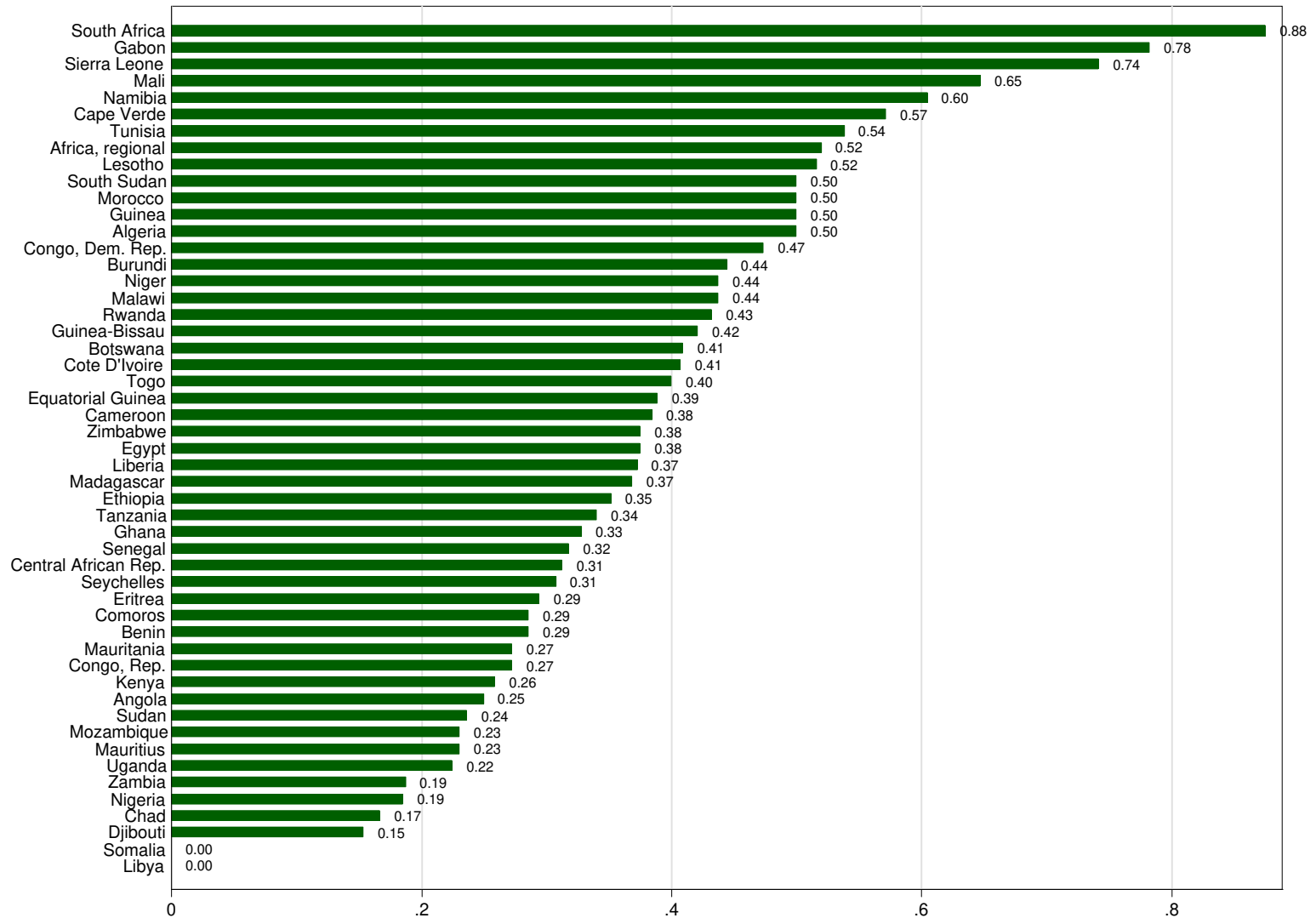
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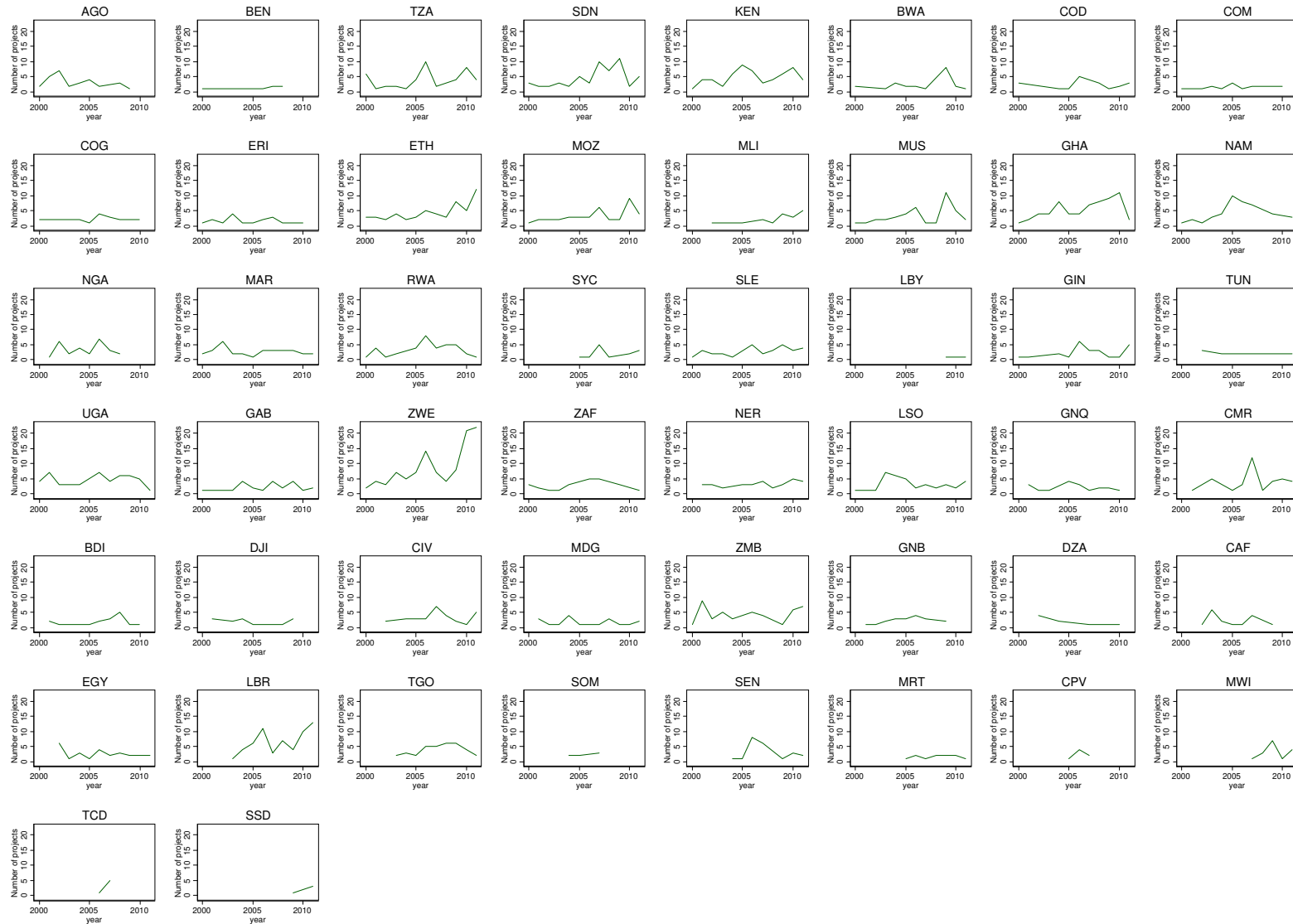
Appendix A

Figure A-1. Share of projects without information on their monetary value



Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

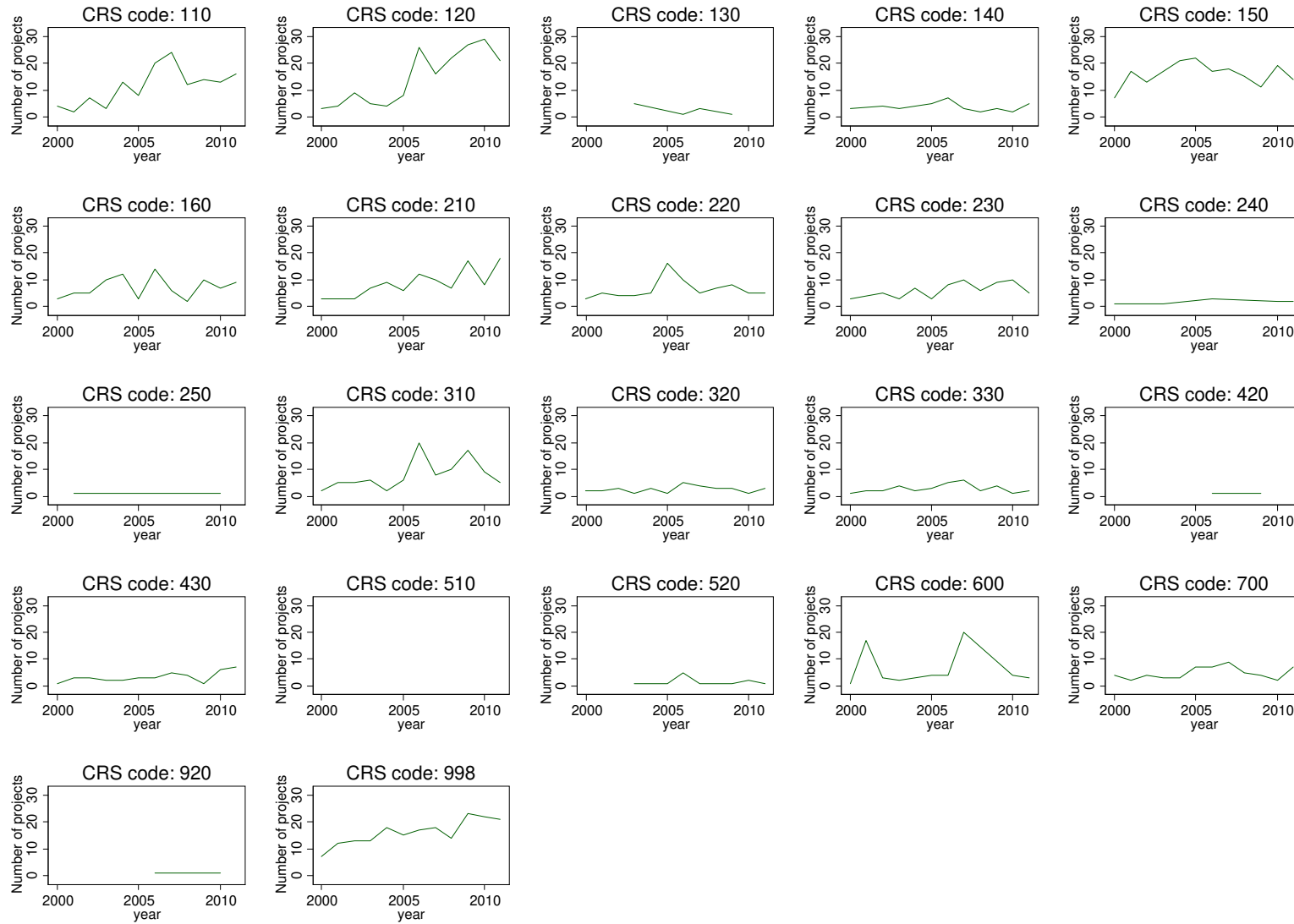
Figure A-2. Chinese official finance over time by recipient country, 2000-2011



Note: See Appendix B for list of countries. AidData did not track any project in Burkina Faso, the Gambia, São Tomé and Príncipe, and Swaziland over the 2000-2011 period.

Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

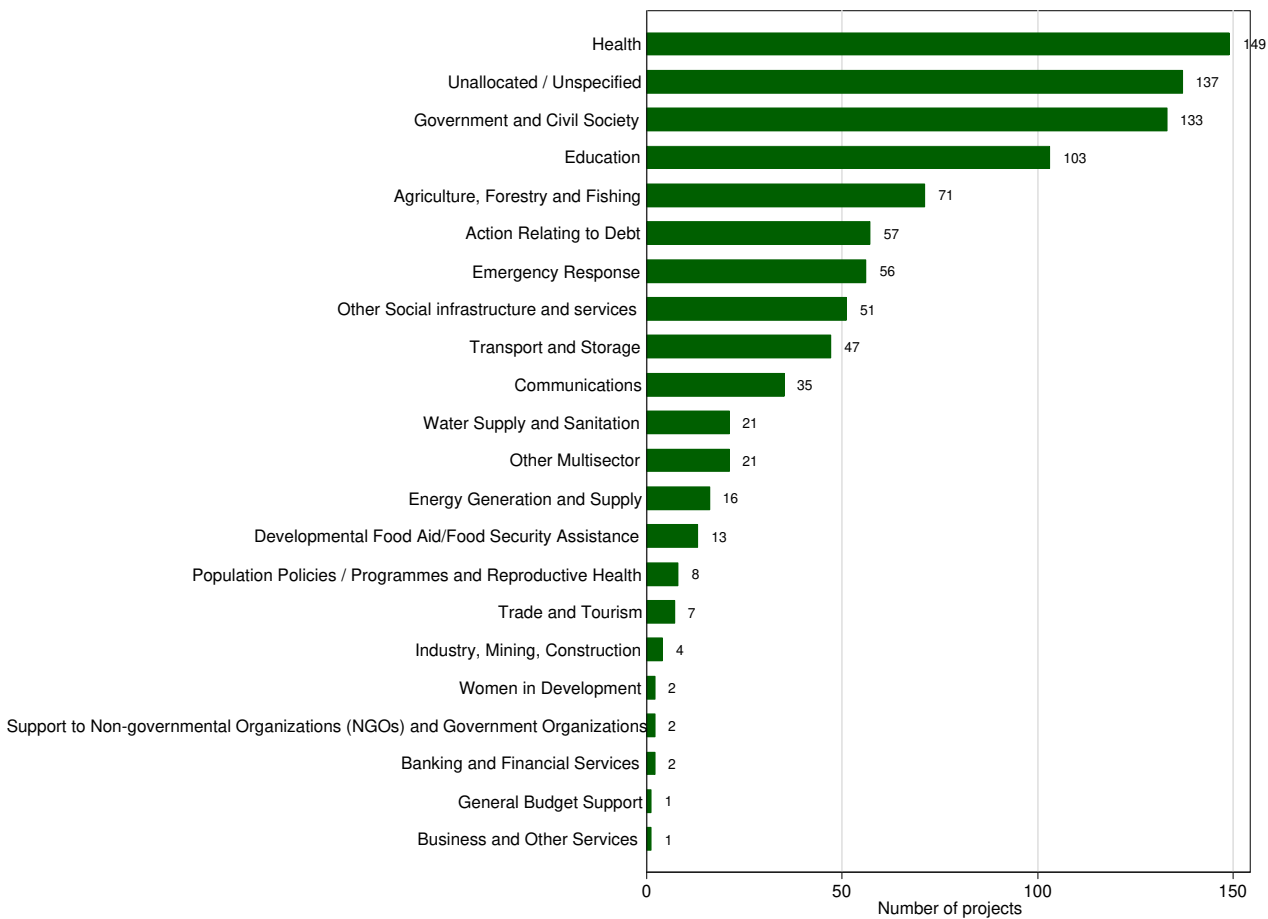
Figure A-3. Chinese official finance over time by sector, 2000-2011



Note: See Appendix C for list of aid sectors

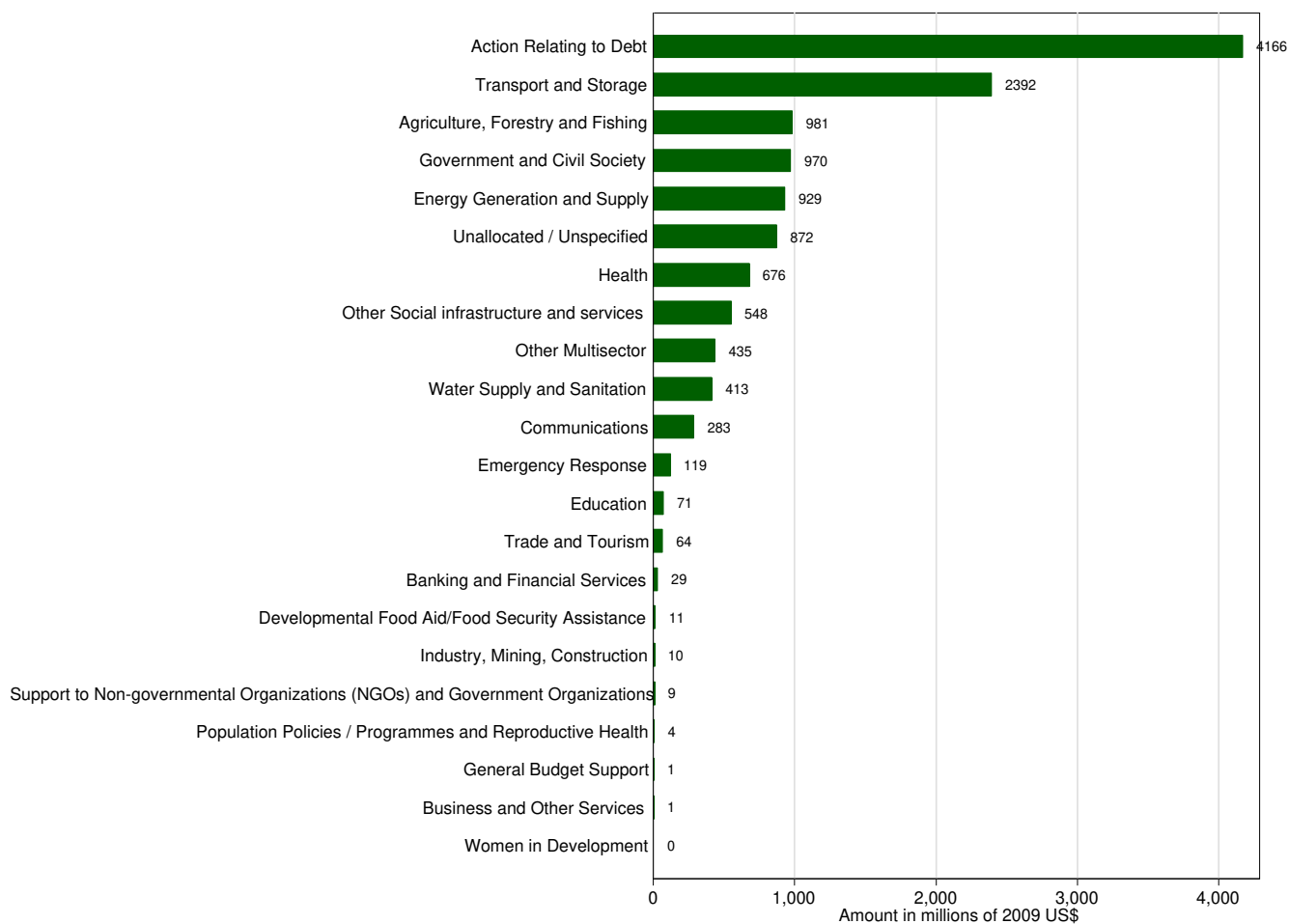
Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

Figure A-4. Number of Chinese ODA projects by sector, 2000-2011



Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

Figure A-5. Monetary amount of Chinese ODA by sector, 2000-2011



Source: AidData's Chinese Official Finance to Africa Dataset, Version 1.0

Appendix B. List of Countries

Code	Country	Code	Country
AGO	Angola	MDG	Madagascar
BDI	Burundi	MLI	Mali
BEN	Benin	MOZ	Mozambique
BFA	Burkina Faso	MRT	Mauritania
BWA	Botswana	MUS	Mauritius
CAF	Central African Rep.	MWI	Malawi
CIV	Cote D'Ivoire	MYT	Mayotte
CMR	Cameroon	NAM	Namibia
COD	Congo, Dem. Rep.	NER	Niger
COG	Congo, Rep.	NGA	Nigeria
COM	Comoros	RWA	Rwanda
CPV	Cape Verde	SDN	Sudan
DJI	Djibouti	SEN	Senegal
DZA	Algeria	SHN	Saint Helena
EGY	Egypt	SLE	Sierra Leone
ERI	Eritrea	SOM	Somalia
ETH	Ethiopia	SSD	South Sudan
GAB	Gabon	STP	Sao Tome and Principe
GHA	Ghana	SWZ	Swaziland
GIN	Guinea	SYC	Seychelles
GMB	Gambia	TCD	Chad
GNB	Guinea-Bissau	TGO	Togo
GNQ	Equatorial Guinea	TUN	Tunisia
KEN	Kenya	TZA	Tanzania
LBR	Liberia	UGA	Uganda
LBY	Libya	ZAF	South Africa
LSO	Lesotho	ZMB	Zambia
MAR	Morocco	ZWE	Zimbabwe

Appendix C. List of Aid Sectors

Code	Sector
110	Education
120	Health
130	Population policies/Programmes and reproductive health
140	Water supply and sanitation
150	Government and civil society
160	Other social infrastructure and services
210	Transport and storage
220	Communications
230	Energy generation and supply
240	Banking and financial services
250	Business and other services
310	Agriculture, forestry and fishing
320	Industry, mining and construction
330	Trade and tourism
410	General environmental protection
420	Women
430	Other multisector
510	General budget support
520	Developmental food aid/Food security assistance
530	Non-food commodity assistance
600	Action relating to debt
700	Emergency response
920	Support to (non-)governmental organisations
998	Unallocated/Unspecified
110	Education
120	Health
130	Population policies/Programmes and reproductive health
140	Water supply and sanitation