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Rogue Aid? The Determinants of China's Aid Allocation

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Abstract

Foreign aid from China is often characterized as 'rogue aid' that is not guided by recipient need but by China's national interests alone. However, no econometric study so far confronts this claim with data. We make use of various datasets, covering the 1956-2006 period, to empirically test to which extent political and commercial interests shape China's aid allocation decisions. We estimate the determinants of China's allocation of project aid, food aid, medical teams and total aid money to developing countries, comparing its allocation decisions with traditional and other so-called emerging donors. We find that political considerations are an important determinant of China's allocation of aid. However, in comparison to other donors, China does not pay substantially more attention to politics. In contrast to widespread perceptions, we find no evidence that China's aid allocation is dominated by natural resource endowments. Moreover, China's allocation of aid seems to be widely independent of democracy and governance in recipient countries. Overall, denominating aid from China as 'rogue aid' seems unjustified.

JEL-Code: F350.

Keywords: aid allocation, China's foreign aid, new donors, donor motives.

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1. Introduction

Development aid plays a pivotal role as an economic reward and punishment mechanism between nations. An extensive literature on the allocation of aid by traditional donors exists, which emphasizes that aid is frequently given for political reasons rather than economic needs (e.g., Alesina and Dollar 2000; Neumayer 2005; Kuziemko and Werker 2006; Dreher et al. 2009a, 2009b; Kilby 2011). With the ongoing redistribution of world power, so-called new donor countries appear and might (ab)use development aid to push through their interests. Only recently have scholars started analyzing the allocation of aid from these so-called emerging donors with quantitative methods (see Neumayer 2003a, 2004; Dreher et al. 2011). According to the results in Dreher et al. (2011), 'new' donors attach less importance to recipient need than Development Assistance Committee (DAC) donors when allocating aid. However, concerns that commercial self-interest distorts the allocation of aid seem to be overstated for new and old donors alike. Arguably, these findings might be driven by the omission of *the* major 'new' donor, China.[1]

China is often described as the chief villain among the 'new' donors. Naím (2007) characterizes its development aid as 'rogue aid' as it is not guided by need in the developing countries, but rather by China's national interests. The determinants of Chinese development assistance are, according to Naím, access to resources and boosting international alliances. Moreover, 'rogue donors' are said to undermine the development efforts of Western donors to promote good governance in the developing world. However, this verdict is based on selective case studies only. No empirical study exists confronting the various claims about Chinese 'rogue aid' with data. This is because comprehensive data on the allocation of China's development aid are difficult to obtain.[2]

In this paper, we make use of various datasets on the allocation of Chinese foreign aid. First, we use data on the number of aid projects completed. Data are obtained from Bartke (1989), who collected news items on China's economic aid between 1956 and 1987, and from the China Commerce Yearbook that covers the 1990-2005 period (Ministry of Commerce 1984-2009). Second, we use data on the estimated amount of Chinese foreign aid (in US$) that has been provided to recipient countries until the mid-1980s. Data are collected from

[1] Taken literally, China is not a new donor. Its aid program already started in the 1950s. By 1975, it provided aid to more African countries than the United States (Brautigam 2008). This is true for many other "new" donors as well. What is new however, is the attention they receive. Apart from that, China does not perceive itself as a donor but rather as a partner in "South-South cooperation" (Davies 2007).

[2] In the words of Berthélemy (2009: 2), "data are simply not available." Berthélemy (2009) thus uses data on contracted projects with Chinese companies as a proxy for aid, given that aid is usually tied to contracts with Chinese companies. While aid projects are arguably related to amounts of aid, they cannot be distinguished from foreign direct investment with this approach.

various intelligence reports of the CIA (1975-1984), from an OECD study (1987) and again from Bartke (1989). Third, we make use of data on the number of medical teams that have been dispatched, also collected from the China Commerce Yearbook. Finally, we employ a dataset on food aid (World Food Programme 2011), which reports the amount of emergency aid, program aid and project aid in tons of grain equivalent allocated since 1988 for 108 donors, including China.

We use these data to empirically test the various hypotheses about China's aid allocation proposed in the previous literature. First, we analyze China's allocation of development aid in five phases of the Chinese aid program between 1956 and 2006. Second, in a cross-section of 132 recipient countries over the 1996-2005 period, we compare the allocation of China's project aid to that of DAC and emerging donor countries.

To foreshadow our results, we find that political considerations are an important determinant of China's allocation of aid. However, when we compare its allocation to those of other donors, China does not pay significantly more attention to politics. We find only mixed evidence that commercial motives determine China's aid allocation decisions. Neither democracy nor governance play an important role. Overall, denominating aid from China as 'rogue aid' thus seems unjustified.

We proceed as follows. In Section 2, we introduce our data on China's allocation of aid, while outlining our hypotheses regarding the determinants of China's aid allocation in Section 3. The method of estimation and our main econometric results are presented in Section 4. In Section 5, we compare China's allocation of aid to those of the DAC and other 'new' donors. The final section concludes the paper and draws policy implications.

2. Measuring Chinese aid

A substantial number of players are involved in the Chinese development assistance program (Davies 2007; Brautigam 2008, 2010; Kobayashi 2008). Strategic decisions are made by the State Council, which is the highest authority of the state administration. The main government body responsible for China's aid is the Ministry of Commerce (MOFCOM). However, the Ministry of Foreign Affairs (MFA) is also involved. Another major player is the Export-Import Bank – China Exim Bank – established in 1994, which provides concessional loans and export credits. Also set up in 1994, the China Development Bank (CDB) offers

commercial credits and is expected to provide the bulk of the additional resources to Africa promised in the "new strategic partnership" (Davies 2007).[3]

Estimations of the total size of China's aid flows vary considerably. In 2006, Premier Wen Jiabao quantified Chinese aid to Africa over the 1949-2006 period to be about US$5.6 billion (He 2006). According to Davies (2007) however, this figure is considered to be too low by Chinese scholars she interviewed. She provides data on concessional loans by the China Exim Bank outstanding in February 2007, which amount to US$8-9 billion (as reported in Manning 2007: 7). She also cites estimates from Kurlantzick (2006), estimating aid to Africa to be worth US$2.7 billion in 2004, the United Kingdom's Department for International Development (DFID),[4] estimating aid for Africa amounting to US$1.3-1.4 in 2006, and Qi (2007), who estimates aid for Africa to be worth US$1.05 billion and China's total aid budget to be US$1.38 in 2007. According to the Financial Times, China outperformed the World Bank as the world's largest provider of overseas loans to developing countries through its China Development Bank and China Export-Import Bank amounting to at least US$110 billion in 2009 and 2010.[5] Parts of the huge variations between the estimates stem from different delineations of which flows are considered as development aid. Missing information of the degree of concessionality of Chinese loans makes it difficult to apply the definition of official development assistance (ODA) from the DAC.[6]

With the intention to meet objections that China does not provide sufficient information on its aid program, the Chinese government published a White Paper on China's Foreign Aid (State Council 2011). According to this official document, China has provided aid to 161 countries until 2009, of which 123 developing countries received aid on a regular basis. This corresponds to 256.29 billion yuan (US$38.54 billion), of which 41.4% were provided as grants, 29.9% as interest-free loans and 28.7% in the form of concessional loans (State Council 2011). Still, it is not clear which financial flows are included in these calculations. Moreover, the Chinese government declines to publish full information on its annual bilateral aid allocations.

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[3] According to Davies (2007), further actors are the Chinese embassies, which monitor project implementation, and the Ministry of Finance, which negotiates the yearly aid budget and is in charge of China's contributions to international financial organizations. The Ministry of Health is involved when it comes to medical and health projects. Similarly, the Ministries of Education, Agriculture and Science and Technology are in charge of China's aid in their respective fields.

[4] According to an unpublished document, DFID China, January 3, 2007.

[5] "China's lending hits new heights," Financial Times, January 17, 2011.

[6] Brautigam (2008) lists package financing of concessional loans together with export credits, multi-year reporting of aid and media mistakes as additional sources of overestimated aid figures. Note that ODA is defined as concessional financial flows to developing countries that are provided by official agencies with the objective to promote economic development and welfare and that contain a grant element of at least 25% (see http://www.oecd.org/dataoecd/26/14/26415658.PDF, accessed August 2011).

Nevertheless, we are able to make use of several data sources that provide information on four variables that capture the lion's share of China's foreign aid activities since the foundation of its aid program in the 1950s and that by and large qualify as ODA.[7] First, we use data on the number of aid projects completed from Bartke (1989) and from the China Commerce Yearbook (Ministry of Commerce 1984-2009). Bartke (1989) collected 2,500 news items on China's economic aid between 1956 and 1987.[8] Most of them were collected from the Chinese press, with less than 10% originating from secondary sources (mainly from the recipient countries). 528 completed aid projects in 69 developing countries (plus Kuwait and Malta) are recorded in the dataset. The first completed aid project registered in the database was the construction of a textile mill in Thamaing (Burma) in 1956. The single most outstanding project was the construction of the Tanzania-Zambia railway line. Bartke (1989) stresses that only small projects may be missing in the dataset, which presumably was the case if China felt that they were not sufficiently important to be published.

Data on completed aid projects for more recent years are obtained from China's Ministry of Commerce (1984-2009), which provides this information in the China Commerce Yearbook and its predecessors. This information on aid projects completed during the 1990-2005 period was compiled in a comprehensive dataset by Hawkins et al. (2010) and is publicly available. The first completed aid project recorded in the dataset was the construction of a sporting complex in Jordan in 1990, and the last one was the provision of teaching appliances, medical apparatus and agricultural machines to Colombia in 2005. Altogether, the dataset consists of 304 aid projects provided to 97 developing countries (and Malta).

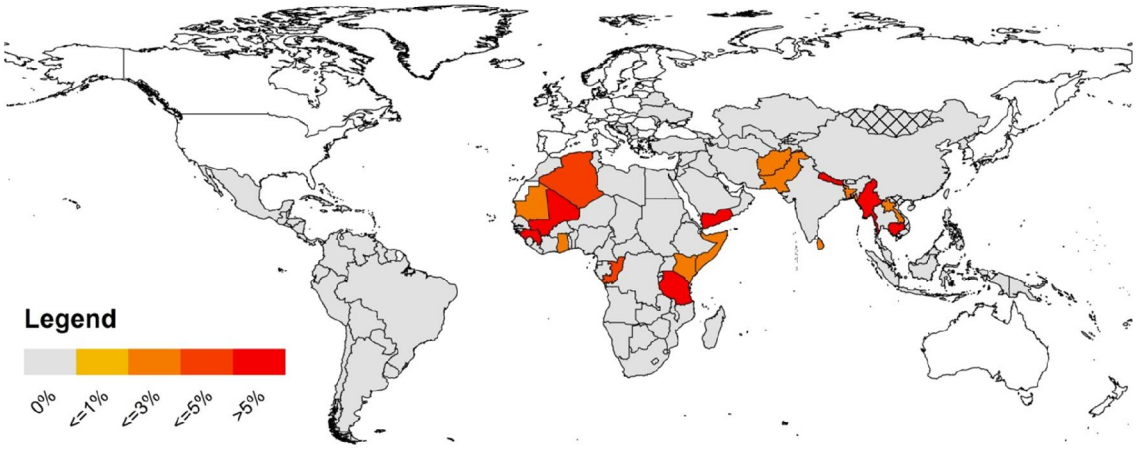
At first, it may seem as a drawback that these data only cover aid projects run by the Ministry of Commerce and exclude those administered by the Exim Bank and the China Development Bank (as well as technical assistance). However, loans from the China Development Bank are not concessional in nature and therefore do not qualify as ODA. Although the Exim Bank partly provides concessional loans, it is contestable whether these flows should be considered as ODA. According to Brautigam (2011: 761), "the large lines of credit offered by Chinese policy banks are not provided as ODA but represent OOF [other official flows], chiefly export credits." The advantage of the omission of data from both banks is that the remaining projects run by the Ministry of Commerce itself can be considered as

[7] For a discussion on which of China's aid flows are likely to qualify as ODA see Kobayashi (2008) and Brautigam (2011).
[8] The NYU Wagner School has also collected data based on news items (Lum et al. 2009). However, these data are unavailable to the public.

ODA,[9] which will allow as a meaningful comparison with ODA allocation of DAC donors in Section 5. Appendix C provides a detailed explanation of the construction of the database of China's project aid.

The share of China's aid projects completed in a particular recipient country over various periods is represented graphically in Figures 1-5.[10] Over the 1956-69 period (Figure 1), few countries received aid from China, and those that did were exclusively located in Africa, the Arabian peninsula and in China's immediate neighborhood. Figure 2 shows the expansion of China's aid in Africa in the 1970-78 period and the first projects carried out in Latin America. This expansion continues further in the years 1979-87 (Figure 3). As can be seen in Figures 4 and 5, China's expansion focused on Latin America in the early 1990s, and on Eastern Europe and Central Asia in the 1996-2005 period.

Figure 1: Number of aid projects completed (% of China's total aid, 1956-1969)

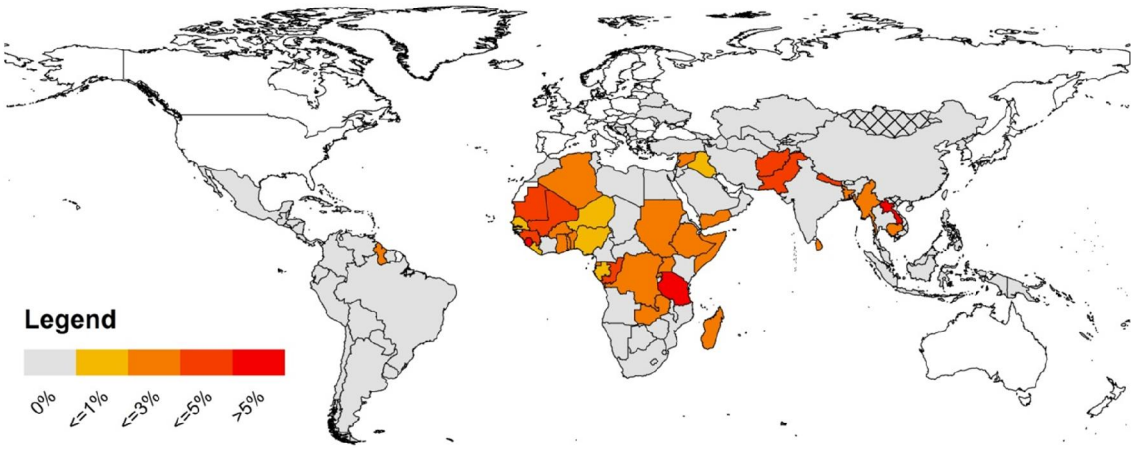


Note: No information available on Albania, Cuba, Mongolia, People's Republic of Korea and Vietnam (shaded area).

[9] According to Brautigam (2011: 756), "[b]y and large, activities financed out of their external assistance budget largely parallel the kinds of activities financed by DAC donors." The State Council (2011) notes that complete projects are provided as grants or interest-free loans.

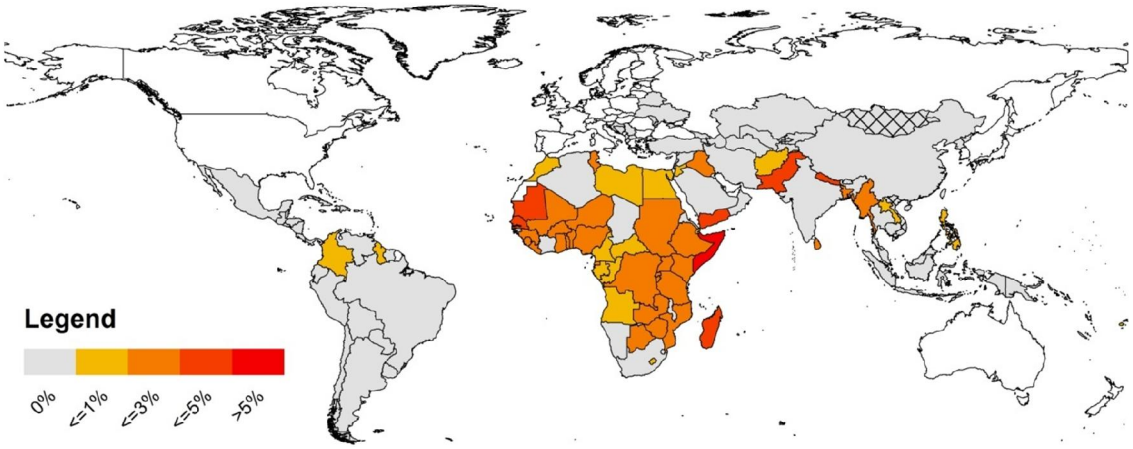
[10] The choice of periods is explained below.

Figure 2: Number of aid projects completed (% of China's total aid, 1970-1978)



Note: No information available on Albania, Cuba, Mongolia, People's Republic of Korea and Vietnam (shaded area).

Figure 3: Number of aid projects completed (% of China's total aid, 1979-1987)



Note: No information available on Albania, Cuba, Mongolia, People's Republic of Korea and Vietnam (shaded area).

Figure 4: Number of aid projects completed (% of China's total aid, 1990-1995)

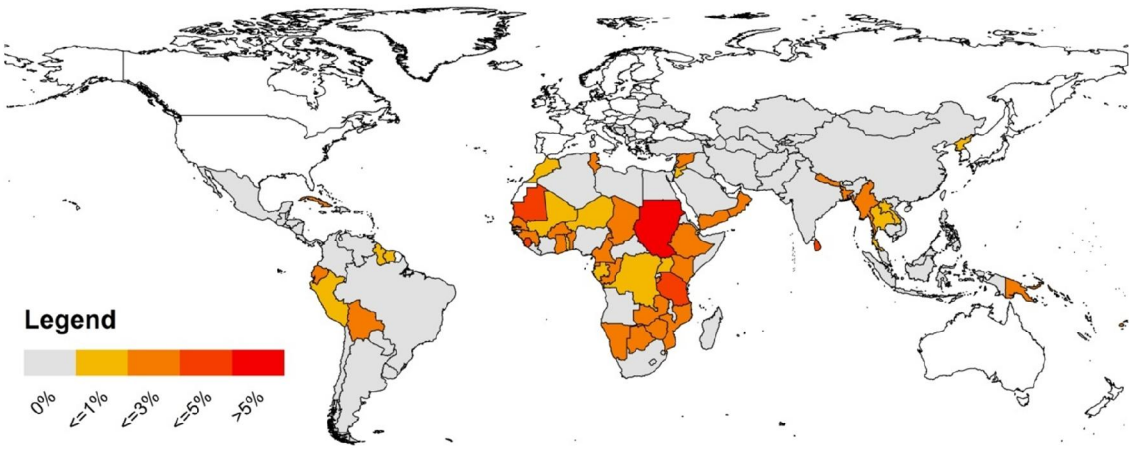
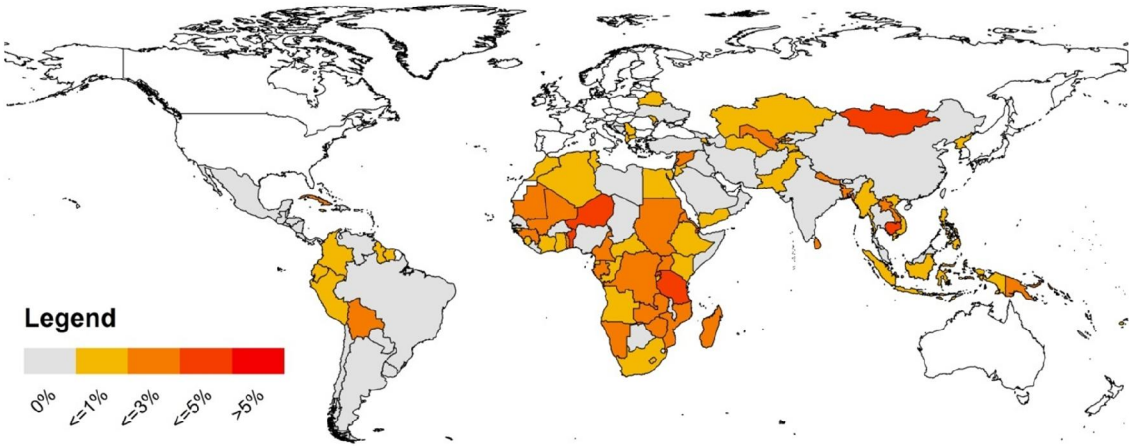


Figure 5: Number of aid projects completed (% of China's total aid, 1996-2005)



Second, we study China's allocation of aid amounts in US$. Data are collected from various intelligence reports of the CIA (1975-1984), from a study of the OECD (1987), and from Bartke (1989). The estimates of China's total aid to recipient countries retrieved from Bartke (1989) include loans and donations and are compiled from Chinese sources, secondary sources and the author's estimates. Tanzania was the single most important recipient of Chinese economic aid between 1956 and 1987. 62.0% of China's economic aid between 1956 and 1987 have been provided to Africa, highlighting China's aspirations to become the leading power in the Third World (Bartke 1989). 22.7% of China's economic aid in this period were provided to Asia, with the intention of creating "friendly relations with its closest neighbours" (Bartke 1989: 10).

The second dataset on aid amounts (US$) has been established based on several intelligence reports from the CIA (1975-1984). This series of handbooks served as the intelligence community's official database on foreign aid activities of communist countries. Data are taken from the most recent report, with missing years being completed using older reports. The established dataset covers economic aid extended to non-communist recipient countries in the 1956-1984 period.[11] Concessional loans and grants are both included. The third dataset is from the OECD (1987). It reports aid commitments in US$ for the 1970-1985 period. The information has been collected from news items from the Xinhua news agency, statements by recipient countries and press reports. The OECD judges its aid data as reliable, with the exception of aid flows to Vietnam and North Korea.[12]

When interpreting the amounts, one should keep in mind that our data on Chinese aid amounts have several drawbacks. Aid amounts may be underreported as all three sources rely on unofficial estimates. Furthermore, aid amounts are not directly comparable to Western aid as they include comparably low costs for Chinese workers participating in the projects. Starting with Mao Zedong until the reign of Deng Xiaoping, all workers in aid programs were paid according to the wage level in the respective recipient country. According to Bartke (1989), Chinese aid volumes should thus be multiplied by at least ten in order to compare them to projects carried out by Western donors.

Third, we examine China's allocation of medical teams dispatched to developing countries. Starting in 1963 in Algeria, medical teams are usually sent to underdeveloped areas to cure patients, train local medical staff and improve medical and health services in the recipient countries (State Council 2011). Data are obtained from the China Commerce Yearbook (Ministry of Commerce 1984-2009) and cover the 1983-1994 period (except 1993). Throughout this period, medical teams were dispatched to 45 countries. In 1984 alone, China claims to have treated about one million patients (Ministry of Commerce 1985).

Fourth, we make use of a dataset on food aid from the International Food Aid Information System (FAIS), which was developed by the World Food Programme (2011). The amount of food aid is reported in tons of grain equivalent for 109 donor countries, including China, since 1988 and is continuously updated.[13] The values include commodities

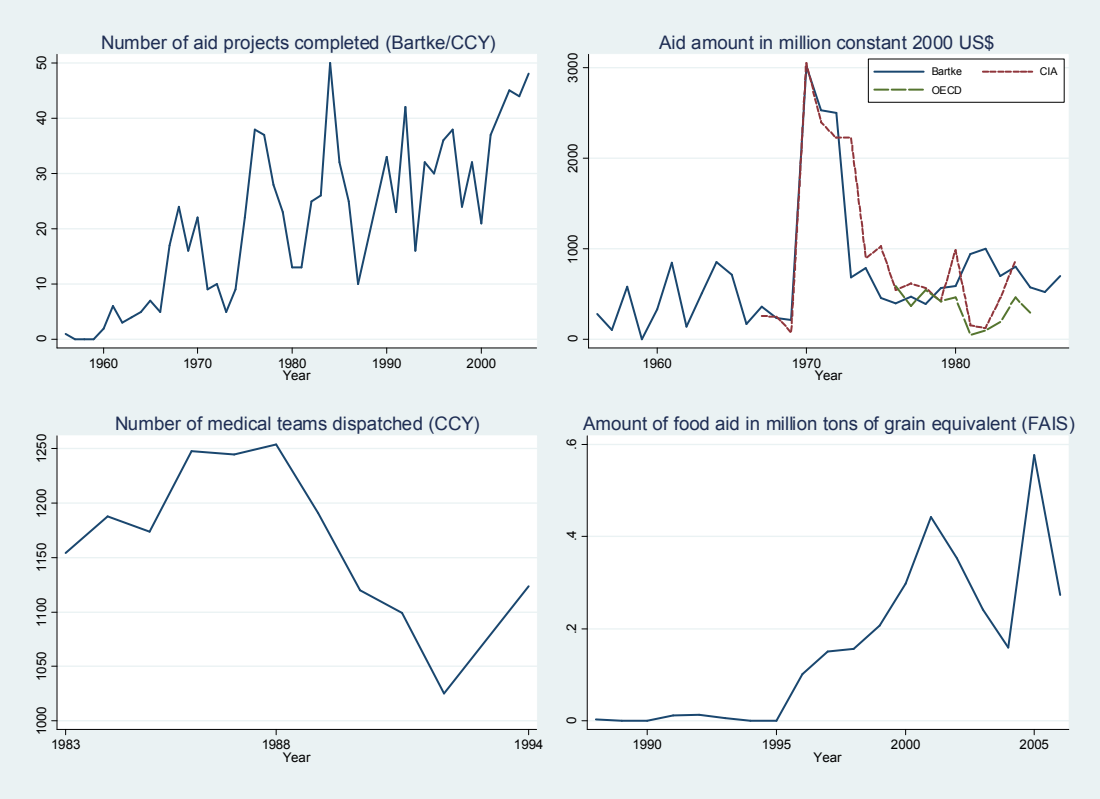
[11] Therefore, the dataset does not cover aid flows to the following communist countries: Cambodia (after 1975), Cuba, Laos (after 1975), North Korea, Vietnam and Yugoslavia. In addition, aid to South Africa is not reported.

[12] Both countries have been excluded from the dataset. Also, in some cases the dataset indicates that a country received aid from China without quantifying it. Therefore, the reported aid values from the OECD should be treated as lower bound estimates.

[13] Neumayer (2005) analyzes the determinants of food aid in the 1990s and finds that the United States and the European Union use it to reward their political allies. His study does neither cover China nor other emerging donors however. Note that we employ data on food aid measured in tons of grain equivalent rather than simply

delivered or locally purchased. Food aid is grouped into three categories: Emergency aid, project aid and program aid. While emergency aid is intended to support the victims of natural or man-made disasters, project aid supports specific poverty-reduction and disaster-prevention activities. In contrast, program food aid is not targeted at specific beneficiary groups and takes the form of a resource transfer for balance-of-payments or budgetary support. China provides all three types of aid. Arguably, food aid and, in particular, emergency food aid is less likely to suffer from political biases compared to other forms of aid. Between 1990 and 2006, China supplied 41 countries with food aid, of which the largest delivery went as emergency aid to North Korea in 2005 (531,416 tons of grain equivalent).

Figure 6: China's foreign aid over time



Note: No annual aid amounts available from CIA before 1967 and from OECD before 1976.

Based on these four aid indicators, Figure 6 provides an overview of the evolution of China's aid program over time. As can be seen, the number of aid projects follows a positive trend, but volatility is high. Aid amounts peaked in the early 1970s and fluctuated in the second half of the 1970s and the 1980s at around US$600 million (constant year 2000) according to the

taking food in metric tons to assure comparability between different types of food aid. Data are available on http://www.wfp.org/fais.

Bartke and CIA measure. The estimates from the OECD are lower and fluctuate at around US$350 million (constant year 2000). The number of medical teams dispatched is substantially lower in the 1990s compared to the 1980s, while food aid only reaches noteworthy amounts since 1996. Appendix D shows the resulting shares of each recipient in China's total aid for each aid indicator.

3. Need, merit and self-interest – is China different?

3.1 A brief history of China's aid program

China began providing foreign assistance to developing countries in 1950 with aid to North Korea and extended its aid to non-communist countries in 1956 in the aftermath of the Asian-African conference in Bandung (State Council 2011). According to Bartke (1989), Cambodia, Nepal and Egypt were the first (non-communist) recipient countries in 1956. China's aid policy can be divided into five phases.[14] In the first phase (1956-1969), China's aid, which at that time only consisted of grants and interest-free loans, is said to have been mainly driven by political and ideological considerations. China supported African countries' independence movements and used its aid to support resistance against colonial powers (e.g., Davies 2007). Even then, the principles of giving aid stressed the self-reliance of the recipient countries and mutual benefit.[15] The 9th Party Congress in 1969 can be seen as the starting point of the second phase (1970-1978). The amount of aid delivered sharply increased, which is seen as being in line with Mao Zedong's claim to assume political leadership in the Third World. In line with this claim to power, China replaced Taiwan on the United Nations Security Council in 1971, which was supposedly supported by aid flows to African countries (Davies 2007). However, after the death of the Communist Party's Vice Chairman Lin Biao in the same year, economic aid was squeezed in 1973 through the influence of Prime Minister Zhou Enlai (Bartke 1989).

After the death of Mao Zedong in 1976, China opened its doors to the West and pursued more pragmatic foreign (and aid) policies.[16] Deng Xiaoping took the leadership of the Communist Party in December 1978, which initiates the third phase (1979-1989). His economic reform program, labeled "Reform and Opening Up," started introducing market

[14] Davies (2007), Brautigam (2008, 2010) and Kobayashi (2008) provide a detailed overview on the history of China's aid program. See also Lin (1995) for a good overview on the history of research on China's foreign aid by both Chinese and Western scholars.

[15] The principles have been put forward by China's Premier Zhou Enlai while visiting Africa in 1964 (Davies 2007; Brautigam 2008).

[16] Chinese Premier Zhao Ziyang stressed four new principles on the economic and technical cooperation between China and Africa in the early 1980s: Equality and mutual benefit, stress on practical results, diversity in form, and common progress (as listed in Brautigam 2010).

principles and gradually opened the Chinese economy to foreign investment and trade. Economic considerations became more influential in China's aid allocation decisions. The scale of individual projects was reduced, but mutually advantageous programs were promoted (OECD 1987). While Chinese aid was provided as interest-free long-term loans or grants in the beginning, conditions became stricter, but were still very favorable in the 1980s: The grant element of Chinese aid fluctuated between 60 and 75 percent over the 1980-1985 period (OECD 1987). Another new focus of China's foreign aid in the 1980s was the emphasis on the upgrading and maintenance of existing projects.[17]

The fourth phase (1990-1995) started after the Tiananmen Square incident in 1989. China sought actively for diplomatic support and increased its aid substantially, in particular to African countries (Taylor 1998; Brautigam 2008, 2010). As pointed out by Taylor (1998), African reactions to the massacre were substantially softer compared to Western reactions, and sometimes even supportive. According to Taylor (1998: 450), "[s]uch a[n aid] policy was a quick and comparatively cheap way by which Beijing could reward those countries that had stood by China during the 1989 crisis as well as cementing relations for the future."

At the same time, planners "were well aware that resource scarcities, particularly in domestic energy, would soon become an issue for domestic production, and they moved to position the country to overcome that challenge" (Brautigam 2008: 11). The importance of economic considerations is said to have become more and more predominant in China's aid strategy (Davies 2007; Pehnelt 2007). In particular, the aid reform of 1995 introduced market-oriented principles and emphasized the linkages between aid, trade and investment (Brautigam 2010). This reform, after which "China's aid activities have entered a completely different phase compared to the previous periods" (Kobayashi 2008: 7), is taken as the starting point for the fifth phase (1996-2006). The central aim of the reform was to multiply the ways in which foreign financing is supplied to developing countries. In addition to grants and interest-free loans as a flexible and quick form of financing, China offered interest-subsidized preferential loans as well as joint ventures and cooperations of complete projects.

A new era for China's aid program started in 2006 with China declaring a "new strategic partnership" at the Forum on China-Africa Cooperation (FOCAC). China announced to double its 2006 aid effort to Africa by 2009 with the aim "to reach the target of mutual

[17] These consolidation efforts included overhaul and provision of equipment, supply of accessories and spare parts, technical guidance and involvement of Chinese nationals in management and the operation of completed projects (Ministry of Commerce 1986: 487).

benefit and win-win situation between China and African countries" (Ministry of Commerce 2007: 416).[18]

3.2 Hypotheses

Chinese aid is not linked to conditions typically imposed by Western donors such as good policies, democracy or respect for human rights. Furthermore, Chinese financial assistance is quickly made available (e.g., Davies 2007).[19] China is thus a welcome alternative to DAC donors with their bureaucratic procedures and detailed policy conditionality. At the same time, development aid from China is criticized as being driven by domestic economic and political interests to a higher extent than development aid from traditional DAC donors. Motives for the allocation of aid can be broadly grouped into three categories; first, aid should depend on need; second, the quality of policies and institutions might matter; and third, the donor's commercial or political self-interests have been shown to play a role (e.g., Alesina and Dollar 2000). We discuss these motives in turn.

With respect to poverty and development, the Ministry of Commerce (1985: 413) emphasizes that its aid projects play "a positive role in expanding the national economies of the recipient countries and improving the material and cultural life of the people in these countries." Emphasizing the idea of 'mutual benefit', the ministry claims "to help the recipient countries develop their national economies and bring about economic progress for both China and these countries" (Ministry of Commerce 1985: 413). The State Council (2011: 6) emphasizes the need orientation in China's aid allocation by claiming that the country "sets great store by people's living conditions and economic development of recipient countries, making great efforts to ensure its aid benefits as many needy people as possible." In the early 1980s, even the CIA (1980: 6) confirmed that the Chinese aid program "fits the needs of the poorest LDCs [least developed countries]." More recently, Brautigam (2008: 7) stresses that China uses its aid to reflect its "vision of itself as a responsible, significant power, quick to deliver humanitarian assistance." Its focus on infrastructure projects might foster developmental needs largely neglected by DAC donors (Brautigam 2008). These views

[18] President Hu Jintao presented a "five point pledge" at the United Nations in 2005, promising debt relief and increased aid flows. Eight concrete measures with regard to Africa followed at the FOCAC meeting in 2006 (Davies 2007; Brautigam 2010).

[19] Hilsum (2006: 7) quotes the Ethiopian ambassador to Beijing: "If a G8 country had wanted to rebuild the stadium, for example, we'd still be holding meetings! The Chinese just come and do it. They don't start to hold meetings about environmental impact assessment, human rights, bad governance and good governance." Brautigam (2008: 21) quotes Senegalese President Abdoulaye Wade, who said in 2006 that "[w]ith the Asian countries it's fast and it's direct."

largely contradict Naím's (2007: 95) claim that rogue donors as China "couldn't care less about the long-term well-being of the population of the countries they "aid.""

Concerning the quality of policies and institutions, China is likely to allocate aid according to the so-called Beijing Consensus, rather than the Washington Consensus.[20] China's approach consists of principles such as non-interference in a country's internal affairs and respect for sovereignty (Davies 2007; Brautigam 2008). The Ministry of Commerce (1990: 63) itself claims that it pays "full respect for the recipient's sovereignty, without attaching any conditions and not asking for any special privileges, which displayed the true spirit of sincere cooperation." Chinese aid "comes without Western lectures about governance and human rights" (*The Economist* May 6th, 2010).[21] We would thus expect Chinese aid to be unaffected by policies and institutions in the recipient countries. It has even been argued that China may concentrate on recipient countries with rather bad governance (Halper 2010). In the words of Pehnelt (2007: 8), since China faces "higher opportunity costs of morality and governance and human rights oriented policies" compared with DAC donors, China has a "comparative advantage" in providing assistance to "unstable and problematic regions and rogue states." Kaplinsky et al. (2007) point out that China sometimes gives substantial amounts of aid to fragile states.

Still, it is open to debate whether Chinese aid differs significantly from the allocation of DAC aid in terms of rewarding "deserving" recipient countries with better governance. This is because previous research points to a considerable gap between the DAC rhetoric of rewarding good governance and their actual allocation of aid. For instance, Isopi and Mattesini (2010) show that Germany, Finland, France, Japan, and the Netherlands give more, rather than less, aid to more corrupt countries.[22] It is frequently expected that absent of any conditionality, Chinese aid will weaken democracy, governance, and human rights, fail to promote development, weaken social and environmental standards, and increase corruption (e.g., Davies 2007).[23] According to Taylor (1998), China enthusiastically opposed

[20] Ramo (2004) compares the two. While the Beijing Consensus has been criticized of misrepresenting China's reforms (Kennedy 2010), the concept might still be informative.

[21] See also Alden (2005), Tull (2006) and Lammers (2007). Halper (2010: 100) cites president Museveni of Uganda: "The Western ruling groups are conceited, full of themselves, ignorant of our conditions, and they make other people's business their business, while the Chinese just deal with you as one who represents your country, and for them they represent their own interests and you just do business." Tull (2006: 466-467) quotes a spokesman of the Kenyan government as follows: "You never hear the Chinese saying that they will not finish a project because the government has not done enough to tackle corruption."

[22] See also Alesina and Weder (2002). Similarly, Neumayer (2003b) find no consistent evidence that DAC donors reward recipients with a good human rights record.

[23] As one example, European Investment Bank president Philippe Maystadt claims that "[t]hey [i.e., the Chinese] don't bother about social or human rights conditions" (Financial Times, November 28, 2006). However, given

democratization in Africa as it could use failed African democratizations as an argument against demands for its own democratization.[24]

Turning to self-interest, facilitating the export of natural resources to China is seen as a central aim of Chinese aid. China's "insatiable needs" for resources (oil, minerals, and timber in particular) are mentioned most frequently as commercial motives of its aid (e.g., Alden 2005; Tull 2006; Davies 2007; Naím 2007; Halper 2010). The Chinese Ministry of Commerce is the head agency in the provision of bilateral aid. This clearly indicates the overriding importance of commercial motives (Lammers 2007). Based on data for Chinese foreign aid collected through news research, Lum et al. (2009) suggest that Chinese aid to Africa and Latin America is determined by economic interests, mainly motivated by the extraction of natural resources. For aid going to Southeast Asia however, Lum et al. conclude that longer-term diplomatic and strategic interests seem to play the predominant role.

In addition to resource security, Chinese aid is accused of targeting future access to export markets and profitable investments (Davies 2007; Lum et al. 2009). Medical aid, for example, is considered as a tool to improve the reputation of Chinese medicine and as "a clever and low cost way to introduce Chinese-made medications to the African market" (Shinn 2006). Chinese aid is tied, which is a further indication that China uses aid to improve business opportunities (Pehnelt 2007; Schüller et al. 2010). The Ministry of Commerce (1999: 75) openly concluded from aid activities in 1998 that, through aid, China's "enterprises entered the markets of the developing countries very quickly and were welcomed by the governments and enterprises of these countries."

Turning to political motivations of China's aid allocation, the Ministry of Commerce (1996: 70) openly admits that grants are used to coordinate diplomatic work and that the construction of "some public institutions […] produced great political influences." Moreover, the aid program is aimed at supporting high-level diplomatic events. For example, to achieve a higher participation of heads of state or heads of government in the opening and closing ceremonies of the 2008 Olympic Games in Beijing, China "speeded up the implementation of the projects concerned by bilateral leaders" (Ministry of Commerce 2009: 348). According to the State Council (2011: 3), however, "China never uses foreign aid as a means to […] seek political privileges for itself."

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that Chinese aid is given in kind rather than cash, it might also be less prone to corruption. China clearly tries to tackle corruption where repayment of its loans is at risk (Brautigam 2008).

[24] According to Deng Xiaoping, "talk about human rights, freedom and democracy is only designed to safeguard the interests of the strong, rich countries [who] practice power politics" (as quoted in Taylor, 1998: 453).

The literature has given special attention to the political motivation of Chinese aid allocation to Africa.[25] As Davies (2007: 27) points out, "Africa is important for China's policy agenda and the building of alliances." It provided support for getting China a seat in the United Nations Security Council (Davies 2007). Specifically, China uses aid to realize its "One-China policy," rewarding countries that do not recognize Taiwan as an independent country (Taylor 1998; Brautigam 2008).[26] However, despite the One-China principle, China does provide aid to countries that recognize Taiwan (see also Davies 2007). African aid recipients supported Chinese efforts to prevent sanctioning its human rights record in international fora such as the UN Commission of Human Rights (Lammers 2007; Lancaster 2007).[27] China expects African countries to gain in political weight in such organizations and seems determined to increase their voice in them (Taylor 1998). According to Tull (2006: 460), China tries "to build coalitions to shield Beijing from Western criticism." As pointed out by Ramo (2004), China has used aid to accumulate sufficient "asymmetric power" in order to challenge the United States as the dominant world power and advance the Chinese concept of a multipolar world (see also Tull 2006; Kennedy 2010).

Given that our data vary over time, we can evaluate whether, and to what extent, the Chinese aid allocation shows (the expected) different patterns over the five phases outlined above. In summary, we expect the first phase (1956-69) to be dominated by political and ideological considerations. The second phase (1970-78) should equally be dominated by political motives, while economic motives should become more relevant in the third phase (1979-89). In search for support after the Tiananmen Square massacre, political clout should dominate again in the fourth phase (1990-95), while commercial and more market-liberal considerations should be important for China's allocation of aid in the fifth phase (1996-2006). In all phases, we expect the non-interference principle to be reflected in China neglecting recipient countries' quality of policies and governance. We expect the allocation of Chinese aid to be driven by resource considerations. However, we also expect its aid to take account, at least to some degree, of poverty and need in the recipient countries.

[25] While most researchers focus on Africa, there is less work on China's aid to Asia. A notable exception is Schüller et al. (2010), who exploit detailed data on China's engagement in Cambodia, among others.

[26] Taiwan also uses aid to reward countries for recognizing it as independent country, sparking "something of a bidding war" (Brautigam 2008: 11). Its dollar diplomacy has been successful in maintaining its international profile (Taylor 1998). See also Rich (2009) for the connection between foreign aid and diplomatic recognition of the two Chinas.

[27] According to Taylor (1998: 451), China is "[a]lways mindful of the fact that the West is in a minority in international organisations such as the United Nations, the courting of support from developing nations enabled China to successfully resist Western 'hegemonism' at a time when the old bi-polar world was crumbling."

4. Econometric analysis of China's aid allocation

4.1 Empirical strategy and data

To test our hypotheses, we look at the four types of aid indicators explained above and estimate the share each developing country receives of total Chinese aid allocated in a particular phase of China's aid program.[28] More specifically, we analyze (1) the number of aid projects compiled from Bartke (1989) and the Ministry of Commerce (1984-2009), (2a) aid amounts in US$ from Bartke (1989), (2b) aid amounts in US$ from CIA (1975-1984), (2c) aid amounts in US$ from OECD (1987), (3) the number of medical teams dispatched from the Ministry of Commerce (1984-2009) and, finally, (4) the amount of food aid supplied as collected by the World Food Programme (2011).[29] We estimate the models using Poisson Pseudo Maximum Likelihood (PPML) with standard errors clustered by recipient country. As Santos Silva and Tenreyro (2006) argue, PPML outperforms simple OLS and Tobit approaches with heteroskedasticity and many zero observations in the data.[30] PPML is frequently used for non-count data in the international economics literature (see Berger and Nitsch 2008, Busse et al. 2011, and Egger and Larch 2011, among many others).

We estimate our models by employing five cross-sections rather than time-series cross-sectional data. Each cross-section corresponds to one of the five phases of China's aid program outlined in the previous section. The reason for estimating cross-sections rather than a panel with yearly data is that China's aid flows are rather volatile from one year to the next (see again Figure 6). The variables that we employ below, however, can hardly be assumed to explain this volatility. Rather, we expect them to be able to explain the average share of total aid that a particular country receives from China in certain years (see also Gupta et al. 2006). Given that we are interested in the differential effects of the explanatory variables over time, we do not pool the cross-sections either, but allow the coefficients of all variables to be different in each cross-section. This choice is supported by a test for equality in coefficients, at the one percent level of significance. The test thus clearly indicates that pooling would not be appropriate.[31] For each aid indicator, we thus estimate the following equation:

$$aidshare_{it} = \exp(x_{it}^{'}\beta_t)\varepsilon_{it}$$

[28] We use the share in the overall aid budget to be able to compare marginal effects over time, even when the average size of China's aid projects changes over time and when focusing on periods that cover a different number of years. We restrict our analysis to recipient countries that are on the DAC List of ODA Recipients as of January 1, 2006 (available at: http://www.oecd.org/dataoecd/23/34/37954893.pdf, accessed February 14, 2011).

[29] We include all three measures of aid amounts in US$ since we have no a priori belief which data source is best suited. The correlation between the three measures is 75.4% (Bartke-CIA), 77.1% (Bartke-OECD) and 80.3% (CIA-OECD), respectively.

[30] Zero aid shares are prevalent in our data – in particular in earlier years (see Appendix D).

[31] For this test, we used our baseline specification in column 1 of Table 1.

where $aidshare_{it}$ is the share of China's total aid that country i receives in phase t of China's aid program; x_{it} is a vector containing a set of explanatory variables (including a constant) interacted with a set of period dummies; β_t is a vector of unknown period-specific parameters; and ε_{it} is stochastic term with unit conditional mean.

In line with the previous literature on aid allocation, we include a set of possible determinants as explanatory variables (e.g., Dreher et al. 2011). Note that all these variables are averaged over the respective time period under consideration. Assuming that 'new' donors such as China are more likely to give aid to countries that are geographically closer to them, we account for the (logged) distance between the recipient and the donor country.[32]

We control for (logged) population of recipient countries in order to control for the size of a recipient country. Larger countries need more resources to develop. Given that our dependent variable is not in per-capita terms, we expect aid to rise with population. The logged per-capita GDP is a commonly used indicator of recipient need, which has repeatedly been shown to shape the distribution of aid. In line with China's official objectives quoted above, we expect the effects of per-capita GDP to be significantly negative in our regressions. As a further proxy for recipient need, we use the (logged) total number of people affected by a natural disaster in the recipient country.

Our primary measure for merit is a dummy for democracy coded as 1 if multiple parties are legally allowed and exist outside the regime front, as well as if the selection of the executive and the legislature involve an either direct or indirect mandate from an electorate (Cheibub et al. 2010). Moreover, in order to qualify as a democracy, incumbents must not be able to unconstitutionally close the lower house of the legislature and rewrite the rules in their favor. Following China's non-interference principle, we expect this variable to be insignificant.

To proxy donors' political self-interests, the literature suggests a recipient country's voting behavior in the United Nations General Assembly (UNGA). Various empirical studies show that developing countries get more aid and better conditions from donors when they have closer political ties with the donor, as measured by their UNGA voting alignment (Thacker 1999; Alesina and Dollar 2000; Barro and Lee 2005; Kilby 2009a, 2010, 2011). Relying on data from Kilby (2009b),[33] we calculate the number of times a country votes in line with China (either both voting yes, both voting no, both voting abstentions, or both being

[32] For example, Harmer and Cotterrell (2005) find that humanitarian aid by non-DAC donors is concentrated in neighboring countries. See also Dreher et al. (2011). In our dataset, bilateral distances are computed as the average of the distance between the major cities of the two countries, which are weighted by the share of the city in the overall population, as defined in Mayer and Zignago (2006).

[33] We thank Christopher Kilby for sharing his revision of Voeten and Merdzanovic's (2009) UNGA data.

absent). We then divide by the total number of votes in a particular year to derive a measure of voting coincidence between zero and one. In the 1996-2005 period, average voting compliance of developing countries with China ranges from 42.1% (Palau) to 92.2% (Indonesia). Since China's seat in all UN bodies was held by Taiwan (Republic of China) until 1971, we make use of voting alignment with Taiwan for the years up to 1971. While we expect that countries voting in line with China in the UNGA receive more aid, countries voting in line with Taiwan are expected to obtain less aid from China.[34]

An important political factor driving China's aid allocation decisions might be the recipient country's adherence to the One-China policy. A country cannot maintain diplomatic relations with both Chinas. While 169 countries recognized the People's Republic of China in 2008, only 23 countries had established diplomatic relations with Taiwan at that time.[35] We make use of a dummy variable that takes a value of 1 if a country has diplomatic relations with Taiwan for six months or more in a particular year (Rich 2009).[36]

To account for commercial interests, we include China's (log) total exports to a particular recipient country in constant US$ as well as a recipient country's (log) oil production in millions of barrels per day. While the former variable intends to capture the idea that China might use its foreign aid program as a tool for export promotion, with the latter variable we intend to test our hypothesis that aid is employed to secure China's access to natural resources. All variables with their definitions and sources are provided in Appendix A. Appendix B shows descriptive statistics.

As evident from our regression equation, we use contemporaneous values of these explanatory variables to explain China's aid shares attributed to developing countries. This may raise some endogeneity concerns. For example, China may not only reward countries that have voted in line with it in the UNGA, but countries may also vote in line after receiving aid from China in the first place. Similarly, China might not only provide more aid to countries with deep commercial ties, but ties might also intensify as a consequence of aid flows. A natural solution is the use of lagged values of our explanatory variables, i.e., the corresponding values before the onset of the respective phase of China's aid program. However, such an approach leads to some pitfalls. First, these past values seem to be decoupled from the actual aid allocations. In the most extreme case, explanatory variables in 1995 would be assumed to explain aid allocations in 2006. Second, bilateral relations need to

[34] Therefore, the variable takes the value of 1 minus the voting alignment with Taiwan until 1971.
[35] Bhutan had no diplomatic relations with either of them.
[36] We thank Timothy Rich for providing the data. He constructed the variable from an analysis of the written record and data provided by the Ministry of Foreign Affairs of the Republic of China (Taiwan) and the People's Republic of China.

be in good shape at the moment when the aid money was disbursed or an aid project was completed. This is of particular importance as China's aid has been suspended in many cases after a deterioration of diplomatic relations with recipients (see Bartke 1989 for a discussion). Beyond that, the question of timing is not central to our research, which aims to examine whether and to which extent political and commercial interests matter for China's aid allocation rather than whether aid is used to bribe or reward the countries.

4.2 China's project aid

The results are shown in Table 1. We run nested regressions for all periods, rather than performing regressions for each phase and comparing the individual results. Pooling the phases enables us to statistically test for differences and similarities among them. Note however, that we introduce dummies for each individual phase; we interact these dummies with our explanatory variables, mirroring individual regressions for the individual phases. Table 1 reports the marginal effects of all explanatory variables in each of the five phases. We also report the p-values of a Wald test for differences in the coefficient of a variable for a particular phase with respect to the most recent phase for which data are available (in brackets).[37] As suggested by Santos Silva and Tenreyro (2006), we run a heteroskedasticity-robust RESET test to test for the adequacy of our models. The corresponding p-values shown in Table 1 indicate that all six models pass the RESET test at the five percent level of significance.[38]

In column 1, we focus on the share of aid projects, based on 528 observations. As can be seen here, the share of projects a country receives is not related to its distance from China, at conventional levels of significance. The exception is the fourth phase (1990-95), where the share of projects increases with distance. However, the effect is only significant at the ten percent level. With respect to the fifth phase, distance matters more in the fourth, also at the ten percent level. Overall, there is no evidence that China gives more aid to countries that are geographically closer, which is contrary to the results in Dreher et al. (2011) for non-DAC donors (excluding China). China, having global ambitions, seems to behave differently than the other (smaller) emerging donors.

[37] Note that comparisons of the first three phases with phase 5 need to be interpreted with caution as we draw data from two different data sources.

[38] At the ten percent level, the estimation based on aid data from the CIA does not pass the test, while the other regressions do.

Table 1: Five Phases of China's aid program

	(1) Aid projects (Bartke/CCY)	(2) Aid amount (Bartke)	(3) Aid amount (CIA)	(4) Aid amount (OECD)	(5) MedTeams (CCY)	(6) Food aid (FAIS)
Distance						
1st phase	-0.073	-2.287**	-1.976**			
(1956-1969)	(0.23)	(2.19)	(2.25)			
	[0.846]	[0.039]	[0.033]			
2nd phase	-0.252	-0.087	-0.013	-0.053		
(1970-1978)	(1.51)	(0.93)	(0.08)	(0.24)		
	[0.233]	[0.925]	[0.377]	[0.432]		
3rd phase	0.192	-0.050	-0.233	0.245	0.774*	
(1979-1989)	(0.98)	(0.15)	(0.96)	(0.93)	(1.79)	
	[0.325]				[0.612]	
4th phase	0.413*				0.927**	-0.048
(1990-1995)	(1.95)				(2.45)	(0.32)
	[0.051]					[0.741]
5th phase	-0.009					0.002
(1996-2006)	(0.06)					(0.93)
Population						
1st phase	-0.156	-0.805*	-0.436			
(1956-1969)	(0.80)	(1.72)	(1.35)			
	[0.474]	[0.094]	[0.059]			
2nd phase	-0.024	-0.042	-0.016	0.027		
(1970-1978)	(0.51)	(1.21)	(0.35)	(0.39)		
	[0.003]	[0.765]	[0.148]	[0.461]		
3rd phase	0.002	-0.006	0.262	0.168	-0.109	
(1979-1989)	(0.02)	(0.05)	(1.47)	(0.92)	(0.87)	
	[0.005]				[0.166]	
4th phase	-0.172*				-0.265*	-0.058
(1990-1995)	(1.85)				(1.76)	(1.23)
	[0.222]					[0.234]
5th phase	-0.308***					-0.002
(1996-2006)	(3.72)					(1.46)
GDP per capita						
1st phase	-0.132	-0.633	-0.496			
(1956-1969)	(0.61)	(0.73)	(0.77)			
	[0.096]	[0.525]	[0.593]			
2nd phase	-0.209*	-0.189**	-0.119	-0.233		
(1970-1978)	(1.84)	(2.56)	(1.16)	(1.49)		
	[0.036]	[0.591]	[0.934]	[0.656]		
3rd phase	-0.328***	-0.094	-0.141	-0.121	-0.523***	
(1979-1989)	(2.75)	(0.54)	(0.55)	(0.58)	(2.74)	
	[0.216]				[0.046]	
4th phase	-0.439***				-0.743***	-0.102
(1990-1995)	(3.16)				(4.81)	(0.99)
	[0.528]					[0.363]
5th phase	-0.528***					-0.008**
(1996-2006)	(4.65)					(2.33)
Disaster						
1st phase	0.014	-0.007	-0.072			
(1956-1969)	(0.72)	(0.08)	(1.44)			
	[0.381]	[0.923]	[0.346]			
2nd phase	0.009	0.030***	0.047***	0.055***		
(1970-1978)	(0.65)	(3.01)	(3.13)	(3.56)		
	[0.244]	[0.496]	[0.040]	[0.499]		
3rd phase	0.030	0.002	-0.018	0.031	-0.031	
(1979-1989)	(1.63)	(0.04)	(0.65)	(1.03)	(1.42)	
	[0.640]				[0.159]	
4th phase	-0.010				0.009	0.017
(1990-1995)	(0.43)				(0.23)	(0.64)
	[0.134]					[0.528]
5th phase	0.048					0.000
(1996-2006)	(1.54)					(0.07)
Democracy						
1st phase	0.016	-0.672	-0.587			
(1956-1969)	(0.09)	(0.93)	(1.04)			
	[0.743]	[0.983]	[0.437]			
2nd phase	-0.112	0.079	0.157	0.039		
(1970-1978)	(0.47)	(0.47)	(0.79)	(0.12)		
	[0.844]	[0.087]	[0.101]	[0.092]		
3rd phase	-1.166**	-0.691	-1.374	-1.626*	-2.035	
(1979-1989)	(2.56)	(1.55)	(1.49)	(1.70)	(1.64)	
	[0.021]				[0.454]	
4th phase	0.128				-1.266**	-0.210
(1990-1995)	(0.68)				(2.03)	(0.77)
	[0.375]					[0.439]
5th phase	-0.059					0.002
(1996-2006)	(0.38)					(1.11)

Table 1 (continued): Five Phases of China's aid program

	(1) Aid projects (Bartke/CCY)	(2) Aid amount (Bartke)	(3) Aid amount (CIA)	(4) Aid amount (OECD)	(5) MedTeams (CCY)	(6) Food aid (FAIS)
Taiwan recognition						
1st phase	-1.288	-5.432*	-4.743*			
(1956-1969)	(0.88)	(1.79)	(1.76)			
	[0.068]	[0.006]	[0.031]			
2nd phase	0.077	-0.039	0.029	-0.600		
(1970-1978)	(0.26)	(0.17)	(0.12)	(0.85)		
	[0.000]	[0.000]	[0.014]	[0.520]		
3rd phase	-23.133***	-26.450***	-46.279**	-1.483	-2.941**	
(1979-1989)	(5.30)	(3.87)	(2.46)	(1.24)	(2.29)	
	[0.000]				[0.543]	
4th phase	-2.400***				-2.094**	0.167
(1990-1995)	(3.51)				(2.44)	(0.75)
	[0.060]					[0.446]
5th phase	-4.750***					-0.002
(1996-2006)	(3.80)					(0.62)
UNGA voting						
1st phase	5.227*	3.616	3.842			
(1956-1969)	(1.78)	(0.66)	(0.94)			
	[0.139]	[0.821]	[0.996]			
2nd phase	7.438***	6.661***	7.875***	6.051**		
(1970-1978)	(4.28)	(4.10)	(4.08)	(2.35)		
	[0.001]	[0.743]	[0.441]	[0.903]		
3rd phase	5.598**	5.181	3.871	5.454	9.113**	
(1979-1989)	(2.20)	(1.25)	(0.84)	(1.26)	(2.29)	
	[0.044]				[0.187]	
4th phase	3.571***				4.570***	1.083
(1990-1995)	(2.86)				(2.90)	(1.24)
	[0.048]					[0.215]
5th phase	0.665					0.004
(1996-2006)	(0.67)					(0.42)
Exports						
1st phase	-0.023	0.075	0.083			
(1956-1969)	(1.39)	(1.00)	(1.16)			
	[0.010]	[0.747]	[0.191]			
2nd phase	-0.002	0.027	0.019	0.024		
(1970-1978)	(0.14)	(1.51)	(0.78)	(0.72)		
	[0.018]	[0.409]	[0.377]	[0.820]		
3rd phase	0.111**	0.118	-0.038	0.038	0.085	
(1979-1989)	(1.97)	(1.08)	(0.61)	(0.64)	(0.91)	
	[0.593]				[0.843]	
4th phase	0.073				0.067	0.026
(1990-1995)	(1.06)				(0.89)	(0.80)
	[0.353]					[0.466]
5th phase	0.157**					0.002
(1996-2006)	(2.33)					(1.42)
Oil production						
1st phase	0.017	0.104	0.082			
(1956-1969)	(0.70)	(1.26)	(1.32)			
	[0.210]	[0.079]	[0.133]			
2nd phase	-0.017	0.004	-0.012	-0.033		
(1970-1978)	(0.99)	(0.41)	(0.66)	(1.04)		
	[0.980]	[0.170]	[0.814]	[0.400]		
3rd phase	-0.052**	-0.039	-0.025	-0.084	0.075*	
(1979-1989)	(2.54)	(1.23)	(0.47)	(1.52)	(1.94)	
	[0.163]				[0.366]	
4th phase	-0.011				0.100**	-0.048
(1990-1995)	(0.53)				(2.23)	(1.60)
	[0.782]					[0.113]
5th phase	-0.018					-0.000
(1996-2006)	(0.97)					(0.93)
# observations	528	267	260	205	240	261
# countries	132	105	101	107	128	132
Log pseudolikelihood	-471.912	-277.096	-277.096	-228.180	-267.580	-202.717
Wald chi2 (p value)	0.000	0.000	0.000	0.000	0.000	0.000
RESET test (p value)	0.536	0.267	0.078	0.630	0.689	0.908

Notes:

- Estimation technique: Poisson Pseudo Maximum Likelihood (PPML) with standard errors clustered by recipient country
- All regressions include time period dummies and all explanatory variables are interacted with these dummies
- We report marginal effects of the explanatory variables (corresponding z-values in parentheses)
- In brackets: p-values of a Wald test of equal marginal effects of the respective period compared to the last period on which data are available
- * (**, ***) indicates significance at the ten (five, one) percent level
- Datasets do not necessarily cover all years of the respective phase of China's aid program (see Section 2 and Appendix A)

Regarding population size, we find no significant effects on the share of aid projects a country receives in the first three phases. Only since the 1990s do we find that larger countries receive fewer projects, at the ten percent level between 1990-1995 (phase 4), and at the one percent level in the 1996-2005 period (phase 5). Given that our dependent variable is not in per-capita terms, this result is surprising. Compared to the fifth period, we find that population was significantly less important for China's decision to grant aid in the second and third period, at the one percent level of significance.

Turning to per-capita income, we find that recipient need is important for China's allocation of aid. Specifically, a country's share of aid projects decreases with per-capita GDP, the effect being statistically significant at conventional levels in phases 2-5. The results also show that the importance of recipient income for China's aid allocation increased in magnitude with time. At the mean of the continuous explanatory variables (and setting the dummies to zero), an increase in per-capita GDP by 10 percent reduces a country's share in China's aid projects by 0.020 percentage points in phase 2 (0.209*log(1.1)), 0.031 in phase 3, 0.042 in phase 4, and 0.050 in phase 5. With respect to the fifth phase, the marginal effects in the first two phases are significantly smaller at conventional levels. Our evidence is thus in line with CIA (1980) and Brautigam (2008), who stress that China's allocation of aid does focus on the need of developing countries. Controlling for per-capita GDP however, the second need-related variable in the model – natural disasters – is not significant at conventional levels in any phase. Apparently, China's project aid does not react to short-term disasters, but rather focuses on the overall level of development.[39]

Column 1 confirms that Chinese aid is largely unrelated to the recipient countries' degree of democracy, in line with our hypothesis presented above. Only in the third phase is democracy significant in explaining the allocation of China's aid projects, with a negative marginal effect. Rather than rewarding more democratic countries, China provides less aid to more democratic countries in the 1979-1987 period, at the five percent level of significance. Quantitatively, the share of China's aid budget a democracy receives is 1.2 percentage points lower compared to non-democracies. This is in line with Taylor (1998), stressing China's enthusiastic opposition to democratization in Africa at a time when demands for more democracy became prevalent in China.[40]

[39] Note that China's disaster relief is not administered by the Ministry of Commerce, but by the Ministry of Civil Affairs (Kobayasi 2008).

[40] We test for the robustness of these results by substituting the democracy index with six alternative measures of governance and institutions in Section 5.

The results show that recognition of Taiwan is clearly important for a country's aid share in most periods. At the one percent level of significance, countries recognizing Taiwan have received less aid since the 1979-1987 period.[41] Quantitatively, the impact of recognition is more important in the third phase, and less important in the fourth phase, when compared to the fifth. Holding all other variables constant, the share of China's aid projects to countries recognizing Taiwan is 4.8 percentage points lower in the fifth phase, and 23.1 percentage points lower in the third phase than for countries that entertain diplomatic relations with the People's Republic instead.

Our second proxy for political interests is a country's voting behavior in the UN General Assembly. As can be seen, voting is important. In all phases, countries voting in line with China (or voting against Taiwan up to 1971) receive a larger aid share. The marginal effect is statistically significant at conventional levels with the exception of the most recent phase (1996-2005).[42] The quantitative impact of voting is sizeable. In the 1956-1969 period a country changing its voting behavior from zero to one (i.e., from always voting with Taiwan to never) receives an aid share that is 5.2 percentage points higher. The impact increases to 7.4 in the second period, but decreases thereafter. In phases 2-4, the impact of voting was significantly more important compared to the fifth phase, at least at the five percent level. There is thus strong evidence that Chinese aid supports its allies, in line with Naím (2007). While we do not find empirical support for the idea that political considerations became more important in the period after the Tiananmen incident, our results confirm our expectations that voting with the UNGA is of less importance in the fifth phase. Taking the results for both political variables together, our empirical evidence suggests that political factors have been important drivers of China's aid allocation decisions across all phases of its aid program.

Finally, we look at whether or not commercial motives are important for China's aid allocation. The results are mixed here. We find a significant impact of a recipient country's exports to China only in two of the five phases. However, these are the two periods, in which we expected commercial interests to be predominant. Specifically, a recipient country's aid share increases with its bilateral exports in the 1979-1987 period (phase 3), the period of Deng Xioping's "Reform and Opening Up," and the 1996-2005 period (phase 5), the period after the aid reform of 1995 that emphasized the linkages between aid, trade and investment. In quantitative terms, an increase in exports by 10 percent increases a country's share in

[41] When we exclude the other variable for political motives, UNGA voting alignment, from the regression, the effect of the recognition of Taiwan becomes statistically significant from the second phase (results available upon request).

[42] Note that the effect of UNGA voting alignment becomes statistically significant at the five percent level in the fifth phase when we drop the Taiwan recognition variable from our regression (results available on request).

China's aid projects by 0.011 percentage points in phase 3 (0.111*log(1.1)) and 0.015 percentage points in phase 5.[43] Nevertheless, given the perceptions about China granting aid for predominantly commercial reasons, this is a surprisingly low effect. This impression is strengthened by looking at the results for oil production. In only one phase do we observe a significant effect (phase 3). However, the marginal effect is negative rather than positive (at the five percent level). The expectation that China is a resource-hungry donor, granting money mainly to oil-rich countries for the sake of securing its resource needs, is therefore not supported.[44]

4.3 Total aid money, medical teams and food aid

Columns 2-6 replicate the analysis employing our alternative dependent variables. The results are in line with those of column 1 to some extent. With respect to the share of the aid amount a country receives, distance hardly seems to matter. Using the data obtained from Bartke (column 2) and the CIA (column 3), we find that more distant countries received significantly less aid in the first phase, but not thereafter. This seems to reflect that China was a small donor in its early years, thus focusing on its neighbors, as is the case for many new donors in recent years (Dreher et al. 2011). Using the OECD data (column 4), the coefficients are not significant at conventional levels for the two phases these data are available. The same holds for food aid (column 6). The exception is medical teams. As can be seen in column 5, more teams go to countries that are further away. Population is not significant at conventional levels in most regressions, with two exceptions where the coefficient is again negative.

Regarding the need orientation of China's total aid amount, we find that more aid money goes to poorer countries in only one of the specifications (phase 2, column 2). While the other marginal effects are all negative (as expected), they are not significant at conventional levels. Moreover, fewer medical teams are sent to richer countries (statistically significant at conventional levels in the third and fourth phase – see column 5), and richer countries also receive less food aid (significant in the fifth phase – column 6). According to columns 2-4, countries hit by more disasters receive larger aid amounts in the second phase, at the one percent level of significance. However, disasters do not seem to matter for the

[43] When replacing bilateral exports by bilateral trade, i.e., exports plus imports, the marginal effects in these two phases are again positive, and even significant at the one percent level. However, bilateral imports to China alone do not turn out to be statistically significant in any of the five phases of China's aid program (results available upon request).

[44] We test for the robustness of these results by substituting the oil production variable with 15 alternative measures of natural resources in Section 5.

allocation of medical teams and food aid, both being aid types that are expected to be particularly responsive to these catastrophes.

The results for democracy are similar to those reported for column 1 above. In phase 3, more democratic countries receive less money, with marginal effects being significant at the ten percent level or slightly below. Similarly, fewer medical teams are dispatched to democracies than to autocracies in the 1990-1995 period (phase 4).

Turning to political motives, both the recognition of Taiwan and UNGA voting are again important determinants of China's allocation of aid. In all phases of China's aid program, there is strong evidence that politics play an important role in the allocation of aid money and medical teams to recipient countries. Only the allocation of food aid does not appear to be shaped by political motivations. With respect to commercial interests, we again find only weak evidence that they drive aid allocation decisions. In particular, there is no evidence that the allocation of aid amounts, medical teams and food aid is used as a tool for export promotion. All of these respective effects are not statistically significant at conventional levels. With the exception of medical teams dispatched, we find no evidence that China's aid allocation is guided by natural resource endowments. An increase of a recipient's oil production by 10% is found to increase this country's share in receiving China's medical teams by 0.007 in the third phase and by 0.010 in the fourth phase, the marginal effects being statistically significant at the 10 and 5 percent level, respectively.

In summary, we did not find much evidence that China ignores recipient need as claimed by its critics when deciding on its aid allocation. Nor did we find strong evidence that commercial interests matter or that recipient countries with bad governance are favored.[45] However, we did find that politics are important in all five phases of China's aid program. While some of the more extreme concerns regarding China's allocation of aid seem to be exaggerated ('rogue aid'), to some extent, China's critics might be right. To the extent that other donors reward democratic countries with more aid, the availability of aid from China could undermine the effectiveness of other countries' aid. Even if recipient need is important for Chinese aid allocation, it could well be that the elasticity of aid to income is substantially lower compared to those of other countries. On the contrary, while we found that politics are important, it might well be that aid from other countries reacts even more to political considerations, in line with evidence reported by Alesina and Dollar (2000) and Kuziemko

[45] Note that our main conclusions hold when we use OLS instead of the PPML approach (results available on request). Our finding that there is only mixed evidence for commercial interests in China's aid allocation decisions is further strengthened by these results: The positive effect of exports on aid projects in the fifth period (1996-2005) loses its statistical significance at conventional levels in the OLS setting.

and Werker (2006). In order to assess these questions, we need to compare the allocation of China's aid with those of other donors. This is what we turn to next.

5. Comparison with DAC and other emerging donors

In order to study whether China's aid is really different, Tables 2-4 compare China's aid allocation decisions in the 1996-2005 period with those of the DAC donor countries, as well as emerging donors. First, we compare China's aid allocation to that of the United States, Japan, and the average of the three biggest EU countries (Germany, France and the United Kingdom). Second, Chinese aid allocation is compared to the so-called 'good donors' (Denmark, Netherlands, Norway and Sweden), which are widely expected to provide development aid predominantly based on humanitarian motives. Finally, comparisons are made with Korea, another large emerging Asian donor, and with Saudi Arabia and Kuwait, two Arab non-DAC donors with sizeable aid budgets. Since no information on aid amounts allocated to recipient countries is available for China since the mid-1980s, we rely on the number of aid projects completed under China's aid program and construct a comparable variable for our benchmark countries.[46]

Unfortunately, no direct information on the annual number of aid projects completed is available for the benchmark countries. Therefore, we construct such a variable in three different ways, using data from the project-level aid database AidData.[47] First, we use information on the projected completion date at the time of the commitment of each aid project to derive the year of completion. Second, we estimate the year of completion by taking the mean duration of all projects of a particular country as this entry is missing for earlier years for some countries. Third, since the entry of the year of completion is entirely missing for some countries, we estimate the year of completion for these countries by taking the average of the estimated mean duration of all countries. Since the correlation of the resulting three variables is very high for those countries for which we can construct all three measures, we take the coarsest proxy variable that is based on the single estimated average project duration for all countries and is hence available for all donor countries.[48] Finally, in order to increase the comparability of our variable with the Chinese data, we restrict the

[46] Given that the amounts of China's aid are not directly comparable to Western aid, as outlined above, the focus on the number of projects is preferable. This comes at the disadvantage that projects of different size are treated the same. Focusing on the number or existence of projects rather than or in addition to investigating amounts of aid is standard in the aid allocation literature (e.g., Dreher et al. 2009a, b).

[47] Data are available online at http://www.aiddata.org/research/releases.

[48] The correlation between the direct measure and the coarsest proxy ranges between 94.62 (United Kingdom) and 99.43 (Korea).

projects considered to bilateral flows and to those sectors also included in the Chinese aid dataset.[49]

Table 2: Comparison of China's aid allocation with DAC donors and other emerging donors (1996-2005): Baseline regression

	Distance	Population	GDP p. c.	Disaster	Democracy	Taiwan rec.	UNGA voting	Exports	Oil prod.
China	-0.009	-0.308***	-0.528***	0.048	-0.059	-4.750***	0.665	0.157**	-0.018
	(0.06)	(3.72)	(4.65)	(1.54)	(0.38)	(3.80)	(0.67)	(2.33)	(0.97)
USA	-0.166	0.152**	-0.150**	0.013	-0.039	0.013	1.256*	0.112***	-0.024**
	(1.35)	(2.44)	(2.18)	(0.44)	(0.35)	(0.10)	(1.95)	(2.60)	(2.21)
	[0.387]	[0.000]	[0.002]	[0.349]	[0.905]	[0.000]	[0.628]	[0.515]	[0.755]
EU-3	0.114**	0.076**	-0.119**	0.027**	0.005	0.000	-0.017	0.151***	-0.026***
	(1.99)	(2.40)	(2.56)	(2.08)	(0.08)	(0.00)	(0.03)	(5.32)	(4.37)
	[0.406]	[0.000]	[0.000]	[0.487]	[0.693]	[0.000]	[0.539]	[0.926]	[0.637]
'Good donors'	0.321**	0.135**	-0.139**	0.058	-0.260*	0.058	1.853**	0.088***	-0.039***
	(2.49)	(2.18)	(2.19)	(1.64)	(1.66)	(0.41)	(2.14)	(3.11)	(2.65)
	[0.051]	[0.000]	[0.002]	[0.831]	[0.324]	[0.000]	[0.347]	[0.330]	[0.364]
Japan	-0.305***	0.030	-0.060	0.031**	-0.011	0.156***	1.508***	0.085***	-0.010
	(4.83)	(0.86)	(1.21)	(2.08)	(0.19)	(2.69)	(2.64)	(3.23)	(1.50)
	[0.051]	[0.000]	[0.000]	[0.601]	[0.761]	[0.000]	[0.459]	[0.301]	[0.670]
Korea	-0.479***	0.022	-0.058	0.001	-0.065	0.165	1.249	0.044	0.010
	(5.84)	(0.71)	(1.07)	(0.11)	(0.87)	(1.46)	(1.21)	(1.43)	(0.90)
	[0.002]	[0.000]	[0.000]	[0.155]	[0.974]	[0.000]	[0.653]	[0.108]	[0.158]
Arab donors	-0.356***	0.040	-0.096	-0.046**	-0.043	0.326***	3.476***	0.012	-0.030*
	(4.49)	(0.90)	(1.64)	(2.39)	(0.28)	(3.13)	(3.70)	(1.41)	(1.65)
	[0.030]	[0.000]	[0.000]	[0.004]	[0.937]	[0.000]	[0.033]	[0.032]	[0.597]
# observations					1686				
# countries					132				
Log pseudolikelihood					-1491.759				
Wald chi2 (p value)					0.000				
RESET test (p value)					0.851				

Notes:
- Estimation technique: Poisson Pseudo Maximum Likelihood (PPML) with standard errors clustered by recipient country
- Dependent variable: Number of aid projects completed in recipient country (% of total number of aid projects provided by donor), 1995-2005
- The regression includes donor (group) dummies and all explanatory variables are interacted with these dummies
- We report marginal effects of the explanatory variables (corresponding z-values in parentheses)
- In brackets: p-values of a Wald test of equal marginal effects of the respective donor (group) compared to China
- * (**, ***) indicates significance at the ten (five, one) percent level

We again run nested regressions. So that we can test for differences in the effects of the individual variables on the different donors, we include all donors rather than performing regressions for each individual donor and comparing the individual results. In Table 2, we use the same explanatory variables as in Table 1 above. The RESET test statistic is not statistically significant at conventional levels, i.e., there is no evidence that our model is misspecified. As can be seen, distance matters for all countries except China and the United States. However, while the EU-3 and the 'good donors' give a larger share of their aid projects to more distant countries, Japan, Korea and the Arab donors focus instead on countries that are less distant. This is in line with the observation that 'new' donors focus on their own region (e.g., Dreher et al. 2011). The obvious exception to this rule is China, and the differences in coefficients are significant at the ten percent level at least, for all 'new' donors (again indicated by the Wald tests in brackets).

[49] The sectors included are the following (DAC purpose codes in parentheses): Agriculture, forestry, fishing (311, 312, 313), communications (220), education (111, 112, 113, 114), energy (230), health (121, 122), industry, mining, construction (321, 322, 323), other multisector (430), other social infrastructure and services (160), transport and storage (210), water supply and sanitation (140).

With respect to population, the United States, the EU-3, and the 'good donors' give a larger share of their projects to more populous countries, as expected. Regarding recipient income, this same group of countries gives more aid to poorer countries, at the five percent level of significance, while GDP per capita has no significant impact on the aid allocation of Japan, Korea and the Arab donors. Surprisingly however, the marginal effect of (log) per-capita GDP in the regression for China exceeds those of the other donors by a factor of at least 3. These differences are significant at the one percent level throughout. Consequently, rather than ignoring recipient need in its allocation of aid, China shows the strongest concern for recipient income among the sample of donors we investigate, with a marginal effect even larger than that for the 'good donors'. However, these positive results with respect to recipient need are mitigated through the fact that China's aid shares do not react to population size.

The results also show that few donors allocate significantly larger aid shares to countries hit by disasters. This holds for the EU-3 and Japan at the five percent level. Surprisingly (also at the five percent level), Arab donors allocate fewer projects to countries that experienced catastrophes. Compared to China, the only significant difference holds with respect to these Arab donors, with China allocating more aid to countries hit by disasters, at the one percent level of significance. Again, there is no evidence that China's allocation of aid is inferior from a humanitarian point of view compared to other donor countries.

With regard to democracy, only one of the marginal effects turns out to be significant at conventional levels. Surprisingly, the 'good donors' allocate significantly smaller shares of their aid projects to democracies. However, the difference to China is not significant at conventional levels, as is true for the difference between China and any of the other donors included here.

Table 3 tests for the robustness of these results. We report the results for our baseline model with the democracy variable in column 1 and show the results of seven alternative model specifications in columns 2-8, each time replacing the democracy variable with another indicator for institutional quality.[50] First, we use five indicators of governance provided by Kaufmann et al. (2009). Voice and accountability refers to the extent to which a country's citizens can participate in selecting their governments, as well as freedom of expression, association and the media. Political stability captures a population's perception of its government's stability. It is the perceived likelihood that the government could be overthrown by violent or unconstitutional means. Government effectiveness reflects the quality of the

[50] Due to the lack of space, we do not report the results for the other explanatory variables. The full results are available on request.

administration and of civil servants, and the credibility of a government. It focuses on inputs that governments need to produce, and the implementation of sound policies and delivery of public goods. Regulatory quality measures the government's ability to formulate and implement sound and market-friendly policies and regulations. Finally, the control of corruption index is an aggregate measure of the extent of corruption (defined as the exercise of public power for private gain).[51] Second, we use a composite indicator of economic freedom provided by Gwartney et al. (2009) ranging between 0 and 10, with higher values indicating more freedom. Finally, we employ a dummy variable as an indicator of military dictatorships (taken from Hsu 2008).

Table 3: Comparison of China's aid allocation with DAC donors and other emerging donors (1996-2005): Institutional quality

	(1) Democracy	(2) Voice	(3) Political stability	(4) Government effectiveness	(5) Regulatory quality	(6) Control of corruption	(7) Economic freedom	(8) Military dictatorship
China	-0.059	-0.036	0.103	-0.211	-0.037	-0.201	-0.084	0.357
	(0.38)	(0.32)	(0.86)	(1.36)	(0.27)	(1.39)	(0.95)	(0.98)
USA	-0.039	0.087	0.002	0.085	0.187**	-0.082	0.466***	-0.787**
	(0.35)	(1.27)	(0.04)	(0.87)	(2.09)	(0.91)	(3.81)	(2.49)
	[0.905]	[0.310]	[0.407]	[0.049]	[0.128]	[0.437]	[0.000]	[0.003]
EU-3	0.005	0.103***	0.050	0.121**	0.147***	0.016	0.142*	-0.122
	(0.08)	(2.78)	(1.38)	(2.12)	(2.66)	(0.29)	(1.88)	(1.14)
	[0.693]	[0.234]	[0.663]	[0.030]	[0.158]	[0.123]	[0.015]	[0.138]
'Good donors'	-0.260*	0.058	0.090	0.252**	0.123	0.127	0.075	-0.804*
	(1.66)	(0.69)	(1.25)	(2.32)	(1.27)	(1.41)	(0.51)	(1.90)
	[0.324]	[0.496]	[0.924]	[0.010]	[0.294]	[0.038]	[0.257]	[0.000]
Japan	-0.011	0.011	0.100**	0.153**	0.188***	0.121**	0.120*	0.159
	(0.19)	(0.27)	(2.27)	(2.46)	(3.26)	(1.99)	(1.75)	(0.95)
	[0.761]	[0.688]	[0.985]	[0.026]	[0.097]	[0.035]	[0.015]	[0.601]
Korea	-0.065	-0.090**	0.017	-0.101	-0.065	-0.121*	-0.025	0.134
	(0.87)	(2.19)	(0.32)	(1.39)	(1.27)	(1.89)	(0.35)	(1.08)
	[0.974]	[0.643]	[0.495]	[0.502]	[0.837]	[0.590]	[0.556]	[0.558]
Arab donors	-0.043	-0.022	-0.117	-0.142	-0.072	-0.115	-0.175***	0.136
	(0.28)	(0.22)	(1.20)	(1.13)	(0.83)	(1.21)	(2.79)	(1.07)
	[0.937]	[0.913]	[0.142]	[0.694]	[0.810]	[0.605]	[0.405]	[0.537]
# observations	1686	1666	1666	1666	1666	1666	1175	1326
# countries	132	130	130	130	130	130	91	103
Log pseudolikelihood	-1491.759	-1490.837	-1488.784	-1481.966	-1486.690	-1488.366	-1136.245	-1233.160
Wald chi2 (p value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RESET test (p value)	0.851	0.321	0.394	0.702	0.653	0.571	0.872	0.627

Notes:
- Estimation technique: Poisson Pseudo Maximum Likelihood (PPML) with standard errors clustered by recipient country
- Dependent variable: Number of aid projects completed in recipient country (% of total number of aid projects provided by donor), 1995-2005
- All regressions include donor (group) dummies and all explanatory variables are interacted with these dummies
- All regressions include the same control variables as in Table 2 (Distance, Population, GDP per capita, Disaster, Taiwan recognition, UNGA voting, Exports, and Oil production)
- We report marginal effects of the explanatory variables (corresponding z-values in parentheses)
- In brackets: p-values of a Wald test of equal marginal effects of the respective donor (group) compared to China
- * (**, ***) indicates significance at the ten (five, one) percent level

Columns 1-8 of Table 3 show that China clearly does not take account of institutional quality when deciding on its allocation of aid. In none of the regressions does the coefficient of any of the governance variables turn out to be significant at conventional levels. Comparing the aid allocation of China with that of the other donors, the 'good donors' allocate significantly more aid to more effective and less corrupt countries, and less aid to military dictatorships.

[51] We also did not use the rule of law as it is highly correlated with the control of corruption and government effectiveness.

Table 4: Comparison of China's aid allocation with DAC donors and other emerging donors (1996-2005): Natural resource endowment

	(1) Oil production	(2) Oil production	(3) Oil dummy	(4) Oil reserves	(5) Gas production	(6) Coal production	(7) Diamond production	(8) Energy depletion	(9) Mineral depletion	(10) Total fuel exports	(11) Total OM exports	(12) Total ARM exports	(13) Bilateral fuel imports	(14) Bilateral OM imports	(15) Bilateral ARM imports	(16) Natural capital
China	-0.018	-0.014	-0.181	-0.016*	-0.020	-0.017	0.003	0.009	-0.005	-0.012	-0.000	0.035	0.005	-0.012	0.040**	0.012
	(0.97)	(1.18)	(0.81)	(1.66)	(1.36)	(1.04)	(0.21)	(0.83)	(0.51)	(0.62)	(0.00)	(1.00)	(0.38)	(0.39)	(2.39)	(0.16)
USA	-0.024**	-0.010	-0.160	-0.007	-0.009	-0.016*	-0.006	-0.012*	0.001	0.011	0.042**	0.037	-0.029	0.039**	0.001	-0.101*
	(2.21)	(1.48)	(1.15)	(1.31)	(1.10)	(1.78)	(0.46)	(1.74)	(0.16)	(0.95)	(2.33)	(1.62)	(1.34)	(2.03)	(0.06)	(1.90)
	[0.755]	[0.778]	[0.934]	[0.403]	[0.439]	[0.939]	[0.581]	[0.057]	[0.587]	[0.240]	[0.161]	[0.954]	[0.164]	[0.154]	[0.039]	[0.171]
EU-3	-0.026***	-0.011***	-0.191**	-0.009***	-0.009**	-0.004	0.004	-0.008**	0.001	-0.006	0.012	0.012	-0.020*	0.020**	-0.003	-0.121***
	(4.37)	(2.92)	(2.46)	(3.15)	(1.96)	(0.70)	(0.71)	(2.10)	(0.16)	(0.74)	(1.12)	(0.84)	(1.76)	(2.01)	(0.27)	(3.72)
	[0.637]	[0.820]	[0.967]	[0.489]	[0.417]	[0.365]	[0.920]	[0.114]	[0.568]	[0.741]	[0.652]	[0.499]	[0.147]	[0.279]	[0.020]	[0.070]
'Good donors'	-0.039***	-0.020**	-0.390*	-0.015**	-0.015*	0.004	0.016	-0.001	0.001	0.017	0.032*	0.064**	-0.015	0.098	0.005	-0.115
	(2.65)	(2.32)	(1.93)	(2.36)	(1.68)	(0.48)	(1.55)	(0.15)	(0.18)	(1.18)	(1.75)	(2.26)	(0.62)	(1.28)	(0.26)	(1.52)
	[0.364]	[0.672]	[0.487]	[0.953]	[0.728]	[0.145]	[0.387]	[0.369]	[0.561]	[0.190]	[0.314]	[0.437]	[0.467]	[0.178]	[0.170]	[0.139]
Japan	-0.010	-0.000	0.006	-0.001	-0.005	-0.003	0.004	-0.008**	0.006*	-0.006	0.026**	0.031**	-0.026	0.015	0.031***	-0.053*
	(1.50)	(0.05)	(0.08)	(0.21)	(1.07)	(0.43)	(0.57)	(2.48)	(1.65)	(0.92)	(2.42)	(2.26)	(1.00)	(1.24)	(3.10)	(1.90)
	[0.670]	[0.267]	[0.419]	[0.130]	[0.281]	[0.375]	[0.954]	[0.080]	[0.256]	[0.759]	[0.338]	[0.915]	[0.280]	[0.388]	[0.646]	[0.399]
Korea	0.010	0.010**	0.146***	0.007**	0.011**	0.011**	-0.018	-0.002	-0.000	0.003	0.008	0.030*	-0.035**	-0.007	0.027*	-0.020
	(0.90)	(2.25)	(3.05)	(2.21)	(2.14)	(2.35)	(1.64)	(0.38)	(0.05)	(0.35)	(0.75)	(1.67)	(2.10)	(0.32)	(1.77)	(0.41)
	[0.158]	[0.044]	[0.135]	[0.015]	[0.024]	[0.085]	[0.237]	[0.309]	[0.656]	[0.458]	[0.773]	[0.889]	[0.054]	[0.900]	[0.537]	[0.703]
Arab donors	-0.030*	-0.020*	-0.418	-0.016*	-0.010	-0.007	0.002	-0.018	-0.004	-0.007	0.028	0.010	-0.063	-0.045	0.033	-0.073
	(1.65)	(1.73)	(1.39)	(1.88)	(0.74)	(0.52)	(0.12)	(1.36)	(0.53)	(0.65)	(0.96)	(0.28)	(1.25)	(1.12)	(1.17)	(1.34)
	[0.597]	[0.692]	[0.519]	[0.971]	[0.592]	[0.574]	[0.978]	[0.084]	[0.942]	[0.813]	[0.457]	[0.584]	[0.194]	[0.508]	[0.843]	[0.293]
# observations	1686	1686	1686	1686	1686	1686	1237	1634	1634	1500	1513	1513	633	957	1156	1403
# countries	132	132	132	132	132	132	96	128	128	117	118	118	126	132	132	109
Log pseudolikelihood	-1491.759	-1495.592	-1497.588	-1494.050	-1508.186	-1515.454	-1212.931	-1470.548	-1479.377	-1371.496	-1377.052	-1375.517	-594.265	-917.174	-1071.370	-1278.359
Wald chi2 (p value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RESET test (p value)	0.851	0.622	0.576	0.591	0.322	0.136	0.223	0.206	0.437	0.258	0.251	0.109	0.091	0.370	0.738	0.867

Notes:

- Estimation technique: Poisson Pseudo Maximum Likelihood (PPML) with standard errors are clustered by recipient country
- Dependent variable: Number of aid projects completed in recipient country (% of total number of aid projects provided by donor), 1995-2005
- Oil production in (1) uses data from Humphreys (2005) and BP (2010); Oil production in (2) relies only on BP (2010)
- All regressions include donor (group) dummies and all explanatory variables are interacted with these dummies
- Same control variables as in Table 2 (Distance, Population, GDP per capita, Disaster, Democracy, Taiwan recognition, UNGA voting, and Exports)
- We report marginal effects of the explanatory variables (corresponding z-values in parentheses)
- In brackets: p-values of a Wald test of equal marginal effects of the respective donor (group) compared to China
- * (**, ***) indicates significance at the ten (five, one) percent level

Significant differences also emerge with respect to the EU-3 (2 variables), the United States (3 variables), and Japan (4 variables) – in all cases favoring recipients with good institutions. Therefore, overall it seems the fears that Chinese aid would undermine the efforts of other donors to promote democracy and good governance are exaggerated. Interestingly, Korea favors countries that score worse on the voice and accountability and control of corruption indices.

Regarding politics, the results in Table 2 show that the United States and Japan reward countries voting in line with them in the United Nations General Assembly. The importance of political considerations for these donors is in line with previous research (Kuziemko and Werker 2006; Kilby 2011). We also find that Arab donors allocate a larger share of their aid projects to countries voting with them in the General Assembly, and surprisingly, the same holds for the average 'good donor'. The Arab donors are, according to the UNGA voting measure, the only donors that put significantly more weight on political motives than China does.[52] At the one percent level of significance, Japan and the Arab donors give less aid to countries recognizing Taiwan. It seems that Japan, as China's main regional competitor, supports countries opposing China. Note however, that the quantitative effect of recognition is substantially larger in absolute terms for China than for the Arab donors and Japan.

It is well known that donors' commercial interests affect their allocation of aid. This is clearly confirmed in Table 2. The share in the donor's aid portfolio a country receives increases significantly with exports for most of the donors covered here. At the one percent level, this holds for the United States, the EU-3, the 'good donors' and Japan. Exports do not enter significantly into the regressions for Korea and the Arab donors. Interestingly, exports are not significantly more important for the allocation of Chinese aid compared to any of the other donors (with the exception of the Arab donors). Similarly, China does not place significantly more emphasis on oil production than its peers, as can be seen in the final column of Table 2.

The oil production variable has been chosen primarily for its good data coverage, but it does arguably not capture all facets of a country's endowment with natural resources. In Table 4, oil production (column 1) is replaced by fifteen alternative measures of natural resource endowment; introduced one at the time. We start by varying the data source of the oil production variable (column 2), replace the oil amount by a dummy variable simply

[52] On strategic influences in Arab aid, see Villanger (2007). When we omit the Taiwan recognition variable from our regression, the importance of the UNGA voting alignment is again not statistically different from the effect for the United States, the 'good donors', Japan and Korea. However, China puts significantly more weight on politics than the EU-3, at the ten percent level of significance (full results available on request).

indicating whether a country produces oil or not (column 3), and use oil reserves instead of production to better account for the future availability of oil (column 4). Rather than just focusing on oil, we also employ variables capturing the production of gas, coal, and diamonds (columns 5-7) and the unit resource rents and quantities of energy and minerals extracted (columns 8-9) to display a wider range of natural resources. As a next step, we account for total and bilateral trade with fuel, ore, and agricultural raw materials (columns 10-15). Finally, we use a measure of a country's natural capital as calculated by the World Bank (2010), which is defined as the sum of crop, pasture land, timber, non-timber forest, protected areas, oil, natural gas, coal, and minerals (column 16). Appendix A provides an overview of the sources and definitions of these variables.

As illustrated in Table 4, other than one exception (bilateral imports of agricultural raw materials, column 15), there is no evidence that China provides, on average, significantly more aid to countries that are more abundant in natural resources, and the same holds for most other donor countries. With a few exceptions, there is also no evidence that China's aid reacts more to natural resources compared to other donors. Compared to Korea, it even seems that China pays less attention to these resources. Holding all other variables constant, the respective tests of equal coefficients indicate that Korea's aid program is more targeted to important producers of oil, gas and coal than is the case for China (columns 2 and 4-6). Again it seems that objections against aid from China are overstated.

6. Summary and conclusions

China is said to be the chief villain among the so-called new donors. It has been claimed that it strategically allocates its aid in order to get easy access to natural resources and to bribe countries to get their support in international politics. It is often said that it neglects the recipient countries' institutional quality, thus undermining other donors' efforts to promote the worldwide spread of democracy and the rule of law. China's development aid has even been characterized as 'rogue aid' (Naím 2007). In this paper, we confronted these claims with data. We collected information on the number of Chinese aid projects completed over the 1956-2005 period, the amount of aid money (1956-1987), the number of medical teams sent (1983-1994), and food aid delivered (1988-2006).

Using these data, we tested whether, and to what extent, Chinese aid was motivated by developmental, governance-related, political, or commercial motives over five phases of China's aid program. In the first phase (1956-1969), we expected China's aid to be mainly driven by political and ideological considerations. In the second phase (1970-1978), Mao

Zedong's claim to assume political leadership in the Third World should have further strengthened political considerations in China's aid allocation. After the death of Mao Zedong in 1976, China opened to the West and pursued more pragmatic foreign (and aid) policies. With the reforms of Deng Xiaoping, we expected economic considerations to become more influential in China's aid allocation decisions in the third phase (1979-1989). Political considerations were expected to dominate again in the fourth phase (1990-1995), which started after the Tiananmen massacre in 1989, where China sought actively for diplomatic support and increased its aid substantially. In the fifth phase (1996-2006), we expected market-oriented principles and the linkages between aid, trade and investment to become more important.

Our empirical results are only partly in line with these expectations. Indeed, commercial motives seem to be more relevant for China's allocation of aid in the third and fifth phases. We find that politics are important in all five phases of China's aid program. Countries that vote in line with China in the United Nations General Assembly and do not recognize Taiwan as independent country receive larger aid shares. The results show some evidence that China follows recipient need when deciding on its aid allocation as it favors countries with low per-capita income. Finally, China's aid is for most of the time independent of the recipients' institutional characteristics, which seems to confirm the non-interference principle.

To put these results in perspective, we compared China's aid allocation decisions in the 1996-2005 period with those of traditional DAC donor countries and other emerging donors. There is no evidence that China's allocation of aid is inferior from a humanitarian point of view when compared to other donor countries. When it comes to democracy and indicators of governance, there is also little evidence that China's allocation of aid is inferior. We found that China does not take account of institutional quality when deciding on its allocation of aid. However, the same holds for most other donors in our sample. In particular, we did not find that China's aid is biased towards autocratic or corrupt regimes as claimed by its critics. Based on China's aid allocation decisions, it seems that fears that Chinese aid undermines the efforts of other donors to promote democracy and good governance are exaggerated. The same holds for commercial motives. While commercial interests matter, our empirical evidence does not support the idea that China puts greater weight on giving aid to neither countries with strong commercial ties, nor to countries that are more abundant in natural resources, in comparison to other donors.

Our empirical findings confirm that China's aid allocation decisions are shaped by politics. However, compared to the DAC and other emerging donors, the fact that political self-interest is part of China's aid motives is not exceptional. While both China and DAC donors use aid for strategic reasons, China communicates more openly that its aid serves mutual benefit. We find that China's aid is independent of institutional characteristics, which confirms the non-interference principle. Overall, the verdict that China's foreign aid is 'rogue aid' seems wide of the mark.

A potential drawback of our study is the omission of aid provided by the China Exim Bank. However, since our study covers aid allocated by the Ministry of Commerce, it is unlikely that this omission biases our results against finding a significant impact of commercial motives. Furthermore, it is not clear whether the concessional loans provided by the bank qualify as ODA. The omission could only be overcome if China were willing to publish detailed statistics on its development aid and other official flows. According to our results, greater transparency would be in China's own interest. Comparing our results with anecdotal evidence prevalent in the media, it seems that China has little reason to be intransparent. Transparency might reduce fears about China's aid program.

Other donors seem to see China mainly as competitor (Brautigam 2008) and this contributes to its negative image. They favor their own models of development. However, there is little evidence that the traditional development model works better. As pointed out by Brautigam (2008), the close relationship between Japan as a donor and China as recipient, might serve as role model for China's aid in Africa. China still is a recipient of substantial development aid and has a lot in common with many recipients of its own aid. Therefore, Chinese aid might be more effective than that of the DAC donors, and developing countries might be more willing to listen to its advice (Davies 2007). That being said, the effectiveness of aid depends on factors other than the motives for its allocation. Different modes of delivery as well as project design and supervision might make Chinese aid more or less effective compared to aid of other donors. We leave this important question for future research.

A new era of China's aid program started in 2006 with China declaring a "new strategic partnership" at the Forum on China-Africa Cooperation (FOCAC). China announced to double its 2006 aid effort to Africa by 2009 with the aim "to reach the target of mutual benefit and win-win situation between China and African countries" (Ministry of Commerce 2007: 416). Given the intransparent allocation of China's aid, it remains to be seen whether these promises will (or have been) materialize(d). According to the results of this paper, a surge in Chinese aid is nothing to fear.

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Appendix A: Sources and definitions

Variable	Description	Source
Dependent variables		
Aid projects (Bartke/CCY)	Number of aid projects completed in recipient country (% of total number of aid projects provided by donor), 1990-2005	Bartke (1989), Ministry of Commerce (1984-2009), Hawkins et al. (2010)
Aid amount (Bartke)	Aid provided to recipient country in constant 2000 US$ (% of total aid provided by donor), 1956-1987	Bartke (1989)
Aid amount (CIA)	Aid provided to recipient country in constant 2000 US$ (% of total aid provided by donor), 1956-1984	CIA (1975-1984)
Aid amount (OECD)	Aid provided to recipient country in constant 2000 US$ (% of total aid provided by donor), 1970-1985	OECD (1987)
Medical teams (CCY)	Number of medical teams dispatched to recipient country (% of total number of aid projects provided by donor), 1983-1994	Ministry of Commerce (1984-2009)
Food aid (FAIS)	Food aid provided to recipient country in tons of grain equivalent (% of total food aid provided by donor), 1990-2006	Food Aid Information System (World Food Programme 2011)
Control variables		
Distance	(log) bilateral distance (weighted by populations of major cities)	CEPII (Mayer and Zignago 2006)
Population	(log) total population, average	Penn World Tables (Heston et al. 2009)
GDP per capita	(log) GDP per capita (constant 2005 I$), average	Penn World Tables (Heston et al. 2009)
Disaster	(log) number of people affected by disasters, average	EM-DAT (2010)
Taiwan recognition	1 if recipient country recognizes Taiwan, average	Rich (2009)
UNGA voting	UNGA voting alignment between donor and recipient, average	Voeten and Merdzanovic (2009)
Exports	(log) exports to recipient country (constant 2000 US$), average	Correlates of War (Barberini et al. 2008)
Governance and institutions		
Democracy	1 if the regime qualifies as democratic, average	Cheibub et al. (2010)
Voice	Index ranging from -2.5 to 2.5 with higher values corresponding to better governance, average	Kaufmann et al. (2009)
Political stability	Index ranging from -2.5 to 2.5 with higher values corresponding to better governance, average	Kaufmann et al. (2009)
Government effectiveness	Index ranging from -2.5 to 2.5 with higher values corresponding to better governance, average	Kaufmann et al. (2009)
Regulatory quality	Index ranging from -2.5 to 2.5 with higher values corresponding to better governance, average	Kaufmann et al. (2009)
Control of corruption	Index ranging from -2.5 to 2.5 with higher values corresponding to better governance, average	Kaufmann et al. (2009)
Economic freedom	Index ranging from 0 (not free) to 10 (free), average	Gwartney et al. (2000)
Military dictatorship	1 if political regime of the recipient country is classified as a military dictatorship, average	UTIP (Hsu 2008)
Natural resource endowment		
Oil production	(log) Oil production in millions of barrels per day, average	Humphreys (2005), BP (2010)
Oil production (BP only)	(log) Oil production in tonnes, average	BP (2010)
Oil dummy	1 if oil is produced in recipient country, average	BP (2010)
Oil reserves	(log) Oil reserves in barrels, average	BP (2010)
Gas production	(log) Gas production in tonnes oil equivalent, average	BP (2010)
Coal production	(log) Coal production in tonnes oil equivalent, average	BP (2010)
Diamond production	(log) Diamonds production in metric carats, average	Humphreys (2005)
Energy depletion	(log) Product of unit resource rents and physical quanitites of energy extracted, average	World Bank (http://data.worldbank.org/indicator)
Mineral depletion	(log) Product of unit resource rents and physical quanitites of minerals extracted, average	World Bank (http://data.worldbank.org/indicator)
Total fuel exports	(log) Total fuels exports of recipient country in constant 2000 US$, average	World Bank (http://data.worldbank.org/indicator)
Total OM exports	(log) Total ores and metals exports of recipient country in constant 2000 US$, average	World Bank (http://data.worldbank.org/indicator)
Total ARM exports	(log) Total agricultural raw materials exports of recipient country in constant 2000 US$, average	World Bank (http://data.worldbank.org/indicator)
Bilateral fuel imports	(log) Bilateral fuels imports of donor country from recipient country in constant 2000 US$, average	UN Comtrade via WITS (http://wits.worldbank.org)
Bilateral OM imports	(log) Bilateral ores and metals imports of donor country from recipient country in constant 2000 US$, average	UN Comtrade via WITS (http://wits.worldbank.org)
Bilateral ARM imports	(log) Bilateral agricultural raw materials imports of donor country from recipient country in constant 2000 US$, average	UN Comtrade via WITS (http://wits.worldbank.org)
Natural capital	(log) Natural capital in constant 2000 US$, average (values for 2000 and 2005)	World Bank (2010)

Notes:

- Values in current US$ have been transformed to constant 2000 US$ using US Consumer Price Indices from the World Bank (http://data.worldbank.org/indicator) and the Bureau of Labor Statistics (http://www.bls.gov/cpi/#tables)
- The value of 1 has been added to all trade and natural resource variables as well as to the number of people affected by disasters before taking logarithms

Appendix B: Descriptive statistics

Variable	# obs	Mean	Std. Dev.	Min	Max
Dependent variables					
Aid projects (Bartke/CCY)	528	0.751	1.265	0.000	12.222
Aid amount (Bartke)	267	0.876	1.762	0.000	13.898
Aid amount (CIA)	263	0.890	1.957	0.000	14.522
Aid amount (OECD)	200	0.878	1.700	0.000	10.126
Medical teams (CCY)	233	0.742	2.126	0.000	17.940
Food aid (FAIS)	261	0.394	2.436	0.000	29.551
Control variables					
Distance	528	0.751	1.265	0.000	12.222
Population	267	0.876	1.762	0.000	13.898
GDP per capita	263	0.890	1.957	0.000	14.522
Disaster	200	0.878	1.700	0.000	10.126
Taiwan recognition	233	0.742	2.126	0.000	17.940
UNGA voting	261	0.394	2.436	0.000	29.551
Exports	528	15.803	3.969	0.000	22.548
Governance and institutions					
Democracy	528	0.339	0.442	0.000	1.000
Voice	130	-0.425	0.791	-1.842	1.267
Political stability	130	-0.406	0.875	-2.556	1.365
Government effectiveness	130	-0.479	0.603	-1.987	1.283
Regulatory quality	130	-0.454	0.713	-2.402	1.397
Control of corruption	130	-0.464	0.620	-1.673	1.362
Economic freedom	277	5.505	0.925	3.051	7.494
Military dictatorship	432	0.160	0.327	0.000	1.000
Natural resource endowment					
Oil production	528	4.467	5.782	0.000	16.070
Oil production (BP only)	528	4.383	7.390	0.000	19.951
Oil dummy	528	0.263	0.441	0.000	1.000
Oil reserves	361	5.461	9.602	0.000	26.294
Gas production	461	3.187	6.346	0.000	18.083
Coal production	365	1.649	4.875	0.000	18.736
Diamond production	442	2.010	4.848	0.000	16.889
Energy depletion	429	9.734	9.871	0.000	24.643
Mineral depletion	429	8.662	8.630	0.000	22.226
Total fuel exports	417	20.392	6.427	0.000	30.381
Total OM exports	426	21.202	3.941	0.000	27.636
Total ARM exports	429	21.769	3.062	0.000	27.162
Bilateral fuel imports	119	21.845	4.121	11.791	28.611
Bilateral OM imports	234	13.751	3.420	0.693	21.135
Bilateral ARM imports	274	12.735	4.897	0.000	20.447
Natural capital	197	24.232	2.222	13.915	28.788

Note:

- Descriptive statistics for sample as in Table 1, column 1 (phase 1-5)

Appendix C: Construction of the dataset on China's project aid

We constructed our dataset on the number of China's aid projects completed based on two primary datasets: Bartke (1989) and Ministry of Commerce (1984-2007). The first source is Wolfgang Bartke's book "The Economic Aid of the PR China to Developing and Socialist Countries." It contains information on aid projects completed between 1956 and 1987 with detailed project descriptions. The author "feels certain that no important project [in non-communist countries] has been excluded, especially since it was part of the PR China's promotion of its own image up until 1978 to draw full attention of its economic aid" (Bartke 1989: 5). However, concerning the coverage of certain communist recipient countries, the information on China's foreign aid in Bartke (1989) is incomplete. Therefore, we exclude Albania, Cuba, Mongolia, North Korea and Vietnam from the dataset. Medical groups (including acupuncture medical teams) were also excluded from the Bartke (1989) dataset to achieve better comparability with data from the China Commerce Yearbook discussed below.

In those cases where no year of completion was registered, we estimate the year of completion by adding four years to the start year of a project (48 cases) or by adding five years to the year of signature (6 cases). These values correspond to the average duration of a project after signature or start. 8 of 528 projects had to be excluded from the analysis as information has been provided on neither the year of signature, nor the start year, nor the year of completion of the project. We keep 35 projects that were under construction at the time the book was published. Projects in the planning stage, in turn, were not included in our combined dataset. The construction of the Tanzania-Zambia Railway is counted twice, as one project in Tanzania and one project in Zambia.

Second, we employ data on China's project aid from the Ministry of Commerce (1984-2009), which provides this information in the China Commerce Yearbook and its predecessors – the Yearbook of China's Foreign Economic Relations and Trade, and the Almanac of China's Foreign Economic Relations and Trade. Data are collected by Hawkins et al. (2010) and available on the AidData webpage (http://www.aiddata.org/research/china). The data cover the 1990-2005 period with the exception of 2002. For the 1983-1989 period, as well as the year 2006, the Ministry of Commerce (1984-2009) only provides information on whether or not an aid project was completed in a recipient country, without the possibility of deriving information on the number of projects per country. Altogether, the dataset consists of 304 aid projects provided to 97 developing countries (and Malta).

Appendix D: China's foreign aid to recipient countries (% of total)

Variable	Completed aid projects					Amount			Amount			Amount		MedTeams		Food aid	
Source	(Bartke/CCY)					(Bartke)			(CIA)			(OECD)		(CCY)		(FAIS)	
Time period	1	2	3	4	5	1	2	3	1	2	3	2	3	3	4	4	5
Afghanistan	1.1	3.3	0.5	0.0	0.0	2.8	3.3	0.0	2.8	1.5	0.0	1.9	0.0	0.0	0.0	0.0	0.0
Albania	.	.	.	0.0	0.6	.	.	.	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0
Algeria	3.3	2.8	0.0	0.0	0.3	6.5	2.4	0.0	5.1	1.3	0.0	1.2	0.0	17.5	17.5	0.0	0.0
Angola	0.0	0.0	0.5	0.0	0.6	0.0	0.0	0.1	0.0	0.0	1.4	0.0	1.8	0.0	0.0	0.0	0.0
Anguilla	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Antigua and Barbuda	0.0	0.0	0.9	0.6	0.6	0.0	0.0	0.3	0.0	0.0	<0.1	0.0	0.2	0.0	0.0	0.0	0.0
Argentina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Armenia	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Azerbaijan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bangladesh	1.1	1.1	1.4	2.3	1.2	0.0	1.2	7.9	1.1	1.3	3.0	1.2	5.6	0.0	0.0	0.0	<0.1
Barbados	0.0	0.0	0.5	1.1	0.6	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belarus	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belize	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benin	0.0	1.1	1.8	2.8	3.4	0.0	1.7	2.0	0.0	1.3	0.7	1.4	<0.1	1.8	1.6	0.0	<0.1
Bhutan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Bolivia	0.0	0.0	0.0	2.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bosnia and Herzegovina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Botswana	0.0	0.0	1.4	1.1	0.0	0.0	0.3	0.0	0.0	0.4	1.7	0.1	0.8	1.4	1.7	9.3	0.0
Brazil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burkina Faso	0.0	1.7	2.8	2.3	0.0	0.0	0.3	2.1	0.0	1.5	0.5	1.6	1.3	1.3	1.3	1.6	0.0
Burundi	0.0	0.0	1.4	2.8	0.3	0.0	0.7	0.9	0.0	0.6	3.0	0.6	5.7	0.5	1.3	0.0	0.0
Cambodia	23.3	1.7	0.0	0.0	3.4	4.8	0.3	0.0	9.1	.	.	5.0	0.0	0.0	0.0	0.0	0.0
Cameroon	0.0	0.0	0.9	2.8	1.8	0.0	2.8	0.8	0.0	2.7	0.0	2.4	0.0	1.5	2.4	0.0	0.0
Cape Verde	0.0	0.0	0.9	0.6	1.2	0.0	0.8	0.0	0.0	0.4	<0.1	<0.1	1.9	0.4	0.5	0.9	<0.1
Central African Republic	0.0	0.0	0.5	0.0	0.3	0.4	0.3	0.1	0.4	0.2	0.9	0.0	1.3	1.4	0.4	0.0	<0.1
Chad	0.0	0.0	0.0	1.7	0.0	0.0	1.9	0.0	0.0	1.9	0.0	1.6	<0.1	0.1	0.8	0.0	<0.1
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0
Colombia	0.0	0.0	0.5	0.0	0.6	0.0	0.0	0.5	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0
Comoros	0.0	0.0	0.9	1.7	1.2	0.0	0.1	0.8	0.0	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Congo	3.3	3.3	0.9	1.1	0.9	4.8	2.5	3.4	2.5	1.5	6.4	1.1	2.4	3.0	2.8	0.0	<0.1
Cook Islands	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Costa Rica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Croatia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cuba	.	.	.	1.7	1.5	.	.	.	.	.	.	0.0	0.0	0.0	0.0	0.0	<0.1
Dem. Rep. of the Congo	0.0	1.7	2.3	0.6	1.8	0.0	0.0	0.0	0.0	2.9	<0.1	3.1	0.0	2.6	2.4	0.0	0.0
Djibouti	0.0	0.0	0.9	0.6	3.1	0.0	0.0	1.5	0.0	0.0	2.1	0.0	1.5	0.4	0.4	0.0	0.0
Dominica	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dominican Republic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
East Timor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ecuador	0.0	0.0	0.0	2.8	0.3	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.6	0.0	0.0	0.0	0.0
Egypt	0.0	0.0	0.9	0.0	0.6	0.6	3.0	0.0	10.2	0.8	6.7	0.8	4.2	0.0	0.0	0.0	0.0
El Salvador	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Equatorial Guinea	0.0	2.2	1.4	2.8	0.6	0.0	0.4	1.0	0.0	1.0	0.7	0.3	0.7	1.7	1.7	0.0	0.0
Eritrea	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Ethiopia	0.0	1.7	1.8	1.7	0.6	0.0	4.1	1.1	0.0	2.7	2.5	2.7	0.2	0.9	1.1	0.3	0.2
Fiji	0.0	0.0	0.9	1.7	0.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	0.0	0.6	0.5	0.6	1.2	0.0	0.3	0.8	0.0	0.6	0.0	0.8	0.0	1.5	2.0	0.0	0.0
Gambia	0.0	0.6	1.4	2.8	0.0	0.0	0.4	1.6	0.0	0.4	0.0	0.5	<0.1	1.8	1.9	0.0	0.0
Georgia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ghana	1.1	1.1	1.8	2.3	0.9	4.4	0.0	1.0	4.1	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0
Grenada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Guinea	6.7	3.9	1.4	2.8	2.2	6.7	1.1	2.7	6.6	0.4	3.0	1.6	3.7	2.2	1.6	0.0	0.1
Guinea-Bissau	0.0	0.0	0.0	0.0	0.6	0.0	0.1	0.3	0.0	0.4	0.0	0.5	0.0	1.5	0.0	29.6	0.5
Guyana	0.0	1.7	0.5	0.6	0.9	0.0	2.2	0.6	0.0	1.0	0.2	1.1	0.2	0.0	0.2	0.0	0.0
Haiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Honduras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0
India	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Indonesia	0.0	0.0	0.0	0.0	0.3	1.3	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iran	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0

Appendix D (continued): China's foreign aid to recipient countries (% of total)

Variable	Completed aid projects					Amount			Amount			Amount		MedTeams		Food aid	
Source	(Bartke/CCY)					(Bartke)			(CIA)			(OECD)		(CCY)		(FAIS)	
Time period	1	2	3	4	5	1	2	3	1	2	3	2	3	3	4	4	5
Iraq	0.0	0.6	1.8	0.0	0.0	0.0	1.4	6.3	0.0	1.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Ivory Coast	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jamaica	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Jordan	0.0	0.0	0.5	0.6	0.9	0.0	0.0	0.8	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0
Kazakhstan	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	1.1	0.0	1.4	1.1	0.3	1.9	0.0	2.7	1.8	0.0	3.2	<0.1	5.1	0.0	0.0	0.0	0.0
Kiribati	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Korea, Dem. Rep.	.	.	.	0.6	0.6	.	.	.	.	.	.	.	.	0.0	0.0	0.0	96.8
Kyrgyzstan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Laos	1.1	5.6	0.5	0.6	1.5	1.1	1.7	0.0	0.0	.	.	0.8	0.0	0.0	0.0	0.0	<0.1
Lebanon	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0
Lesotho	0.0	0.0	0.9	0.0	0.9	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.5	0.0	0.0	3.1	0.0
Liberia	0.0	0.6	2.3	0.0	0.0	0.0	0.9	2.7	0.0	0.5	2.8	0.5	4.9	1.0	0.0	0.0	1.1
Libya	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
Macedonia	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madagascar	0.0	1.7	3.2	0.0	1.5	0.0	1.2	3.1	0.0	2.2	0.0	1.9	4.0	2.4	2.5	0.0	<0.1
Malawi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Malaysia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0
Maldives	0.0	0.6	0.0	1.1	0.6	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mali	12.2	5.0	2.3	0.6	1.8	3.7	1.1	3.2	5.2	0.6	0.4	1.5	1.7	2.6	2.8	0.0	<0.1
Marshall Islands	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mauritania	1.1	5.0	3.2	3.4	1.2	0.4	1.4	3.6	0.4	2.2	1.1	2.3	3.8	2.9	2.4	7.6	0.1
Mauritius	0.0	0.6	0.9	2.3	0.6	0.0	1.2	1.2	0.0	1.1	0.0	1.1	1.0	0.0	0.0	0.0	0.0
Mayotte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0
Micronesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moldova	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	.	.	.	0.0	3.7	.	.	.	.	.	.	0.0	0.0	0.0	0.0	13.7	<0.1
Montserrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Morocco	0.0	0.0	0.9	0.6	0.3	0.0	0.9	0.0	0.0	1.2	<0.1	0.8	0.0	5.1	6.8	0.0	<0.1
Mozambique	0.0	0.0	1.4	1.1	1.2	0.0	0.4	0.3	0.0	0.3	1.4	1.9	1.4	1.3	0.8	9.3	<0.1
Myanmar	5.6	1.1	1.8	1.1	0.9	16.2	0.0	6.7	2.7	2.5	8.9	<0.1	10.2	0.0	0.0	0.0	0.3
Namibia	0.0	0.0	0.0	1.7	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nauru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nepal	5.6	4.4	4.6	2.3	2.5	7.0	1.3	1.0	6.4	3.7	3.4	4.3	2.8	0.0	0.0	0.0	<0.1
Nicaragua	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Niger	0.0	0.6	2.8	0.6	3.4	0.0	0.9	0.5	0.0	1.4	0.3	1.7	0.7	2.3	1.3	0.0	<0.1
Nigeria	0.0	0.6	1.8	0.0	0.0	0.0	0.1	1.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0
Niue	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oman	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pakistan	2.2	5.0	4.1	0.0	0.9	13.9	12.4	2.5	14.5	11.9	9.5	9.8	2.4	0.0	0.0	1.5	<0.1
Palau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palestinian territories	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Panama	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Papua New Guinea	0.0	0.0	0.0	1.1	1.2	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paraguay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peru	0.0	0.0	0.0	0.6	0.6	0.0	1.6	0.9	0.0	1.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Philippines	0.0	0.0	0.5	0.0	0.3	0.0	0.0	0.8	0.0	0.0	2.1	<0.1	0.0	0.0	0.0	0.0	0.0
Rwanda	0.0	1.7	2.8	0.0	3.1	0.0	1.3	0.0	0.0	1.3	0.0	0.7	0.0	0.7	0.9	0.0	<0.1
Saint Kitts and Nevis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Lucia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saint Vincent and the Gr.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Samoa	0.0	0.0	0.5	1.1	0.9	0.0	0.4	0.0	0.0	0.2	0.0	0.0	0.6	0.0	0.0	0.0	0.0
Sao Tome and Principe	0.0	0.6	0.0	1.1	0.0	0.0	0.3	1.2	0.0	0.4	<0.1	0.3	0.0	1.1	1.4	0.0	<0.1
Saudi Arabia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Senegal	0.0	0.6	3.7	2.3	0.0	0.0	0.7	0.7	0.0	1.5	<0.1	1.5	<0.1	1.6	1.6	0.0	<0.1
Serbia / Yugoslavia	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0
Seychelles	0.0	0.0	0.5	1.7	1.5	0.0	0.1	0.7	0.0	<0.1	0.0	<0.1	0.4	0.3	0.5	0.0	0.0
Sierra Leone	0.0	7.8	2.8	4.0	0.9	0.0	0.8	3.3	0.0	1.3	1.0	0.9	1.3	1.3	0.9	0.0	0.0
Solomon Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix D (continued): China's foreign aid to recipient countries (% of total)

Variable	Completed aid projects					Amount			Amount			Amount		MedTeams		Food aid	
Source	(Bartke/CCY)					(Bartke)			(CIA)			(OECD)		(CCY)		(FAIS)	
Time period	1	2	3	4	5	1	2	3	1	2	3	2	3	3	4	4	5
Somalia	2.2	2.8	5.1	0.0	0.0	2.4	5.1	1.3	2.3	3.8	0.9	4.3	0.0	2.5	0.4	0.0	0.0
South Africa	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	.	.	.	0.0	0.0	0.0	0.0	0.0	0.0
Sri Lanka	2.2	2.8	2.3	4.0	1.5	4.6	3.0	2.3	4.0	4.8	<0.1	4.3	3.0	0.0	0.0	0.0	<0.1
St Helens	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sudan	0.0	2.2	1.8	5.1	2.5	0.0	4.3	2.4	0.0	2.6	5.6	2.5	10.1	2.7	2.7	0.0	<0.1
Suriname	0.0	0.0	0.0	0.6	0.6	0.0	0.0	1.4	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Swaziland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Syria	0.0	1.1	0.0	1.1	1.2	1.7	3.1	0.0	1.6	1.6	0.0	1.4	0.0	0.0	0.0	0.0	<0.1
Tajikistan	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tanzania	18.9	12.8	2.8	4.5	4.6	5.6	12.9	5.7	5.6	9.2	13.7	9.2	2.7	5.3	6.7	0.0	0.0
Thailand	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Togo	0.0	1.7	1.4	0.6	1.2	0.0	1.7	1.0	0.0	1.4	0.0	1.4	0.0	1.7	1.9	0.0	0.0
Tokelau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tonga	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinidad and Tobago	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunisia	0.0	0.0	1.4	1.1	0.6	0.0	1.3	2.2	0.0	2.4	0.0	1.5	0.0	3.0	4.6	0.0	0.0
Turkey	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0
Turkmenistan	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turks and Caicos Islands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuvalu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uganda	0.0	2.2	1.4	0.6	1.2	1.5	0.0	1.3	1.5	0.5	0.0	0.0	0.1	1.2	1.1	0.0	<0.1
Ukraine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uruguay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0
Uzbekistan	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	0.0	0.0	0.0	0.6	1.8	0.0	0.0	0.3	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Venezuela	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vietnam	.	.	.	0.0	0.6	.	.	.	.	.	.	.	.	0.0	0.0	0.0	0.0
Wallis and Futuna	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yemen	7.8	2.8	4.6	1.7	0.6	5.3	1.9	0.6	5.8	1.7	0.0	1.8	0.0	14.8	15.9	0.0	<0.1
Zambia	0.0	1.7	2.8	1.7	2.8	2.3	6.3	1.3	1.6	8.9	0.9	8.7	1.4	2.1	2.1	9.4	<0.1
Zimbabwe	0.0	0.0	1.4	1.1	1.5	0.0	0.0	3.5	0.0	0.0	4.6	0.0	7.6	0.9	0.8	13.6	0.0