An Empirical Investigation into the Motivations for and Consequences of China's aid to Developing Countries

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Declaration of Authenticity

This thesis is the result of the author's original research. It has been composed by the author and not been previously submitted for examination which has led to the award of a degree.

Signed: Shazmeen Maroof.

Date: 20/11/2020.

Dedication

To my husband (Muhammad Imran Khan) for his continuous support and his dedicated partnership for success in my life.

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Executive Summary

This thesis consists of three distinct, yet interrelated, chapters titled ‘Assessing the Impact of China’s Aid on the World Bank Conditionality’, ‘A Study on the Role of Human Rights in the Aid Allocations of China and the United States.’, and ‘The Impact of China’s Aid on the Trading Behaviour of Developing Countries’.

The first chapter investigates whether the stringency of conditions attached to the World Bank aid projects are influenced by the additional supply of aid from China. The World Bank’s conditionality has been disaggregated into prior actions and benchmarks. Prior actions are the legal conditions that determine aid disbursement, while benchmarks describe the contents and progress of an aid project. We find that, in particular, China is challenging the way the World Bank is providing aid to African countries, and its impact appears evident from the World Bank’s response; it has reduced the number of prior actions. However, providing an alternate source to China’s aid for other regions seems rather difficult, as no statistically significant association between China’s aid and prior actions can be found.

The second chapter considers whether there is substance to claims that, relative to the US, China disregards human rights considerations when allocating aid. Bivariate analysis demonstrates that a significant share of China’s aid flows to countries that have a poor human rights record. At the same time, the policy of the US in providing aid to those countries seems little different. The empirical results also provided some

support for the general pessimism regarding China's provision of aid to countries with poor human rights records yet challenge the optimists who expect better targeted aid from the US.

The impact of China's aid on the trading behaviour of developing countries is evaluated in the third chapter. The wider implications of China's aid on developing countries' exports and imports from the rest of the world are analysed, and there is also focus on the bilateral effects of China's aid by evaluating recipients' exports and imports from China. The key results indicate that China's aid is effective in promoting the overall exports and imports of developing countries from the rest of the world. As far as the bilateral effects of China's aid on recipients' exports and imports from China are concerned, no strong evidence is found that aid recipients significantly increase their exports and imports from China as a result of receiving aid.

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Introduction

China has emerged as the largest new aid donor in the international aid market, providing a significant amount of aid to developing countries in Asia, Latin America and especially in Africa. Despite the popular terminology which classified China as a 'new' donor, its presence in the foreign aid market is not so new as it has now been providing aid for over 50 years. Africa, for example, has been a recipient of China's aid since the 1950s. However, irrespective of when China began its aid programmes, it is the considerable increase in China's foreign aid spending since 2000 that is considered to be new and that can no longer be ignored (Woods, 2008).

China's aid approach is grounded in 'non-interference policy'; that is, a willingness to provide aid without Western lectures about good governance and respect for human rights. Unlike traditional donors, China's aid policies stipulate that it should not impose any political conditions and there should be no interference in the "internal affairs of the recipient countries … fully respecting their right to independently choose their own paths and models of development" (State Council, 2014). The non-interference approach has been criticized in the literature based upon the assumption that it has enabled China to maintain friendly relations with countries that abuse human rights. China's aid has also been criticised for its lack of transparency as it does not report its foreign aid activities to international organisations. Nor does it release an official and comprehensive data on its aid allocations. The increase in China's aid in

the last decade has, therefore, been watched with much suspicion by policymakers and academics in the field of politics and international development.

Be that as it may, there is a need to evaluate this criticism on China's aid, especially as the traditional donors continue their efforts to increase the effectiveness of their aid programmes. Therefore, the aim of this thesis is to empirically investigate the motivations for and consequences of China's aid to developing countries. This thesis will address the following questions from both a theoretical and empirical perspective:

1) Has China's emergence as a foreign aid donor had any discernible impact on the conditionality of aid provided by the World Bank?
2) Is there substance to claims that, relative to the US, China disregards recipient countries' respect for human rights when making aid allocation decisions?
3) Is there evidence to support claims that China's provision of foreign aid is motivated by China's self-interest which shows up in bilateral trade flows?

Answering these research questions will help us in evaluating whether the negative characterization of China's aid by Western media and African critics is justified. The findings may also help traditional donors to compare their aid practices with China in order to ensure better donor harmonisation. More importantly, it will help the concerned civil society of China and recipient countries to evaluate the negative narrative about China's aid motivations and consequences.

The thesis is divided into three chapters. The first chapter builds upon the pioneering work of Hernandez (2017) on the competition between new donors and World Bank

conditionality. Hernandez (2017) emphasized that China is providing developing countries with an attractive source of finance for aid projects which does not require reforms on the part of the recipients to enhance transparency and fiscal efforts, or to curtail corruption. The alternative source of aid from China, which is apparently free of conditionality, could improve the bargaining position of recipient countries, influencing the extent to which the World Bank imposes conditions for aid projects (Hernandez, 2017, p.532). His empirical results confirmed that the World Bank delivers aid with significantly lesser conditions to African recipient countries financed by China in order to stay competitive with China's apparently less-conditional aid. This finding is conflicting since the objective of the World Bank conditionality is to divert aid to good policy environments in order to increase the overall aid effectiveness.

The first chapter extends Hernandez's study by making three distinctive contributions. First, it extends the focus beyond Africa to consider the data coverage of 132 developing countries across the world. Second, it disaggregates China's aid into Official Development Assistance (ODA) and Other Official Flows (OOF); the former being more concessional and development-oriented and the later less concessional and commercially oriented. For the purpose of this study, this disaggregation is important because: a) a large proportion of China's global aid spending consists of OOF; and b) the World Bank might react differently to different types of aid from China based on their concessional level. Third, the study disaggregates the type of World Bank conditionality into Prior Actions and Benchmarks. Prior actions are a set of institutional actions and policies that a recipient country has to implement before the World Bank approves an aid project, whereas, benchmarks are not legal conditions,

and are only used as reference frameworks to describe the content and results of an aid project. The reason for separately investigating the impacts of these types of conditionality, where feasible, is that they have completely different approaches. Moreover, there is an unsettled argument about the counting benchmarks as conditions.

The second chapter sheds light on another dominant issue that continues to resurface in policy debate and media reports, that China provides aid to countries with poor human-rights records. The chapter is motivated by a desire to investigate whether there is substance to claims that, relative to the US, China disregards human rights considerations when allocating aid. While the stated policy of the US government is that consideration of potential aid recipients' respect for human rights is mandatory, some quantitative studies have cast doubt on whether this policy is reflected in actual allocations. There is a lack of academic literature that formally assesses the extent to which the two countries' aid allocations differ, but this is essential to determine whether the criticisms of China's aid policy in comparison to that of the US are justified. The few empirical studies of China's aid allocation have evaluated the role of human rights only in passing since their key focus was on other economic and political determinants of aid flows, whereas Chapter two of this thesis squarely identifies human rights considerations in China's aid allocation as the key focus of inquiry.

Using data on two standard human rights measures, the 'Political Terror Scale' (PTS) and 'Civil Liberties' (CL), the second chapter analyses the two donors' aid allocations

among developing countries across the world, with a special focus on Africa. After carefully analysing the correlation between these two indicators, the author is confident that they accurately capture the human rights violations in a country. This chapter focuses on Africa because: a) most of the critique of China's aid is limited to Africa; b) both China and the US allocate substantially more aid to Africa than other regions; and c) Africa has a disproportionately large number of countries with poor human rights records.

The third chapter contributes to the literature on aid and trade by analysing the impact of China's aid on the trading behaviour of developing countries. The literature has highlighted several transmission channels through which foreign aid could enhance recipients' trade. For example, aid given in the form of cash transfers increases recipients' disposable income, and consequently, their capacity to import foreign goods. Moreover, trade-related aid in infrastructure could facilitate recipients' trade by removing key infrastructure bottlenecks, thereby reducing trade costs, whereas, trade-related aid to the production sector may help recipient countries by enhancing their productive capacity and competitiveness. Finally, good-will effects and tied aid are expected to foster trade between donors and recipients at the bilateral level.

While there has been much research on the aid and trade relationship for traditional donors, there has been very little work on the potential trade enhancing impacts of China's aid. China is often accused of having commercial motivations for offering aid, namely the primary motive is to secure export orders. Similarly, several studies assert that China's aid to Africa is primarily driven by a desire for access to Africa's natural resources by trade and investment ambitions. However, these critics provide little

empirical evidence to support their claims. This thesis contributes to the existing empirical literature on aid and trade by focusing on the trade implications of China's aid for all the developing countries across the world.

Moreover, earlier studies have mainly focused on the bilateral effects of aid on recipients' exports/imports from donors. In contrast, the third chapter investigates the overall effect of China's aid on recipients' exports and imports from not only China but also the rest of the world. Aid may predominantly affect recipients' trade with its bordering countries and not necessarily recipients' trade with the donor. If foreign aid is effective in strengthening the export capacity of the recipient country (that is, total exports increase as a result of receiving aid), it would be progressive from a development perspective, irrespective of the effects on bilateral trade between China and the recipient. As a second step, this chapter evaluates the bilateral effects of aid by analysing China's exports and imports from recipient countries.

Chapter 1: Assessing the Impact of China's Aid on the World Bank Conditionality

1.1 Introduction

Prosperity, well-being and living standards are not evenly distributed among countries. The prosperous countries, therefore, extend support to developing countries in the form of aid with the hope of setting the latter on the path of progress. An unending debate exists on the likely implications and effectiveness of foreign aid. The advocates of the foreign aid doctrine have produced a considerable amount of work as well as evidence to show a positive role that has been played by the foreign aid in accomplishing development targets (Hansen and Tarp, 2001). On the other hand, the critiques of the doctrine see foreign aid as a source of exploiting the developing countries (Moyar, 2016). However, ironically, at a time of enormous skepticism about foreign aid (Qian, 2015; Young and Sheehan 2014), the number of aid donors have hit an all-time high. Specifically, there has been an emergence of 'new' donors in the foreign aid market which operate outside the traditional Development Assistance Committee (DAC)[1]. The increasing influence of new donors on parts of the developing world seems to challenge the established aid principles held by traditional donors. Woods (2008) suggested that a silent revolution is taking place in the international aid market, with a growing number of new donors changing the rule of the game by offering financial alternatives to aid-receiving countries.

[1] The Organization for Economic Cooperation and Developments (OECD) Development Assistance Committee (DAC) brings together 30 major providers of foreign aid, i.e., DAC donors. Since the inception of OECD in 1961, these DAC donors have led the global aid architecture by setting a body of guiding practices and principles for aid provision.

The group of new donors mainly comprise of BRIC and Arab countries. The most prominent among them is China who has emerged as the largest global provider of aid, surpassing the aid volumes of traditional multilateral institutions, i.e., the World Bank and largest DAC donor, i.e., the US (Zhou and Xiong, 2017). A contrast between China and traditional donors' aid approach is the use of conditionality in the form of reforms to enhance transparency, fiscal efforts and governance. China's approach is grounded in 'non-interference policy' which stipulate that there is no interference in the "internal affairs of the recipient countries and fully respecting their right to independently choose their own paths and models of development" (State Council, 2014). The non-interference approach has been criticised in the literature under the assumption that it has enabled China to be welcomed by poorly governed countries. In contrast, traditional donors require conditionality in the form of reforms to enhance transparency, fiscal efforts, human rights and curtailing corruption. For instance, The World Bank uses i) binding conditions known as 'prior actions' through which aid flows could be curtailed if recipient countries do not implement specific policies; and ii) non-binding conditions known as 'benchmarks' as a reference framework and management tool to indicate the overall performance of an aid program.

Although China does not set the typical type of conditions as that of traditional donors, its apparently unconditional aid approach does not mean that China's aid comes with no strings attached. As argued by Wang and Ozanne (2000), China's aid is often "tied" and provided on commercial conditions, i.e., importing raw materials from China, the aid project being undertaken by Chinese firms, sending Chinese labour to recipient

countries as well as provide training of the recipient's labour. So, China's aid involves "a complete package of measures, combining technical solutions with financing backed by state-owned banks, together with Chinese labour to implement them" (Wang and Ozanne, 2000).

The literature argues that an increase in the supply of China's aid with fewer performance-based conditions has offered attractive alternatives for recipient countries and they are generally more comfortable with obtaining easy and quick credit from China (Li, 2017). Some cases are reported in the literature in which developing countries have preferred receiving aid from China over the World Bank, IMF or other DAC donors. An empirical study by Granath (2016) investigated the relationship between China's and DAC aid flows and found that there is a competition between China and traditional donors to provide aid to the same recipient countries. Noticing this competition created by the contrasting approach of new vs traditional donors, Hernandez (2017) examined the impact of the increase in supply of aid resources from five new donors (i.e., China, India, Kuwait, Saudi Arabia and the United Arab Emirates) on the World Bank's use of conditionality in African countries.

Hernandez proposed that the World Bank could react to the additional aid resources from new donors in two ways: either it will call for reforms promoted through conditions if the additional aid from new donors seems to cause debt overhang in recipient countries, or it may have to offer aid with fewer conditions for attracting recipients in order to stay competitive. Specifically, the study hypothesised that "The World Bank will revise its conditionality downwards if the presence of new donors

creates an increase in the supply of development resources in the recipient country and upwards if it does not" (Hernandez, 2017, p. 532) According to his findings, the World Bank delivers aid with significantly fewer conditions to African recipient countries financed by China in order to stay competitive with China's apparently less-conditional aid. In contrast, the impact of other new donors on the World Bank conditionality was found to be less relevant. Since Hernandez's study focused only on recipient countries situated in Africa, there is a question as to whether the research findings can be generalised to the entire pool of aid-recipient countries across different regions.

This chapter attempts to replicate and extend Hernandez's pioneering work with the aim of investigating whether China's emergence as an aid donor had any discernible impact on the conditionality of aid provided by the World Bank. We examined a sample of 132 China's aid-recipient countries across the world. This work is feasible given the release of newly available data on 'Global Coverage of Chinese Aid' by AidData (a research lab at the College of William and Mary). The analysis focuses on China because of two reasons. First, the data on China's aid has the most comprehensive and detailed information at the project-level. Second, China is the only new donor whose aid spending has become comparable in scale with the World Bank and the US (See Figure 1.3). The aid spending of other new donors is quite small as compared to China (See Figure 1.4).

The study adds three distinctive contributions to this body of literature. First, we test Hernandez's hypothesis on the recipient countries beyond Africa by extending the data

coverage on China's aid from 1952 aid projects in Africa to 4300 aid projects across the world. The data quality within African aid projects has also been improved by the identification of suspended or cancelled projects by AidData.

Second, we disaggregate China's aid into Official Development Assistance (ODA) and Other Official Flows (OOF). ODA includes official projects that are primarily aimed at development, with at least 25% concessionality (e.g. scholarships, technical cooperation, or a concessional loan) (OECD, 2018a). OOF is also provided by official agencies but on terms that more closely resemble market conditions (OECD, 2018b). It comprises of export financing and other commercial activities that promote the donor countries economic interests; or developmental loans that are less concessional than ODA. For the purpose of this study, this disaggregation is important because a) a large proportion of China's global aid spending comprises of OOF; and b) the World Bank might react differently to different types of China's aid based on their concessional level.

Third, we disaggregate the World Bank conditionality into Prior Actions and Benchmarks. Prior actions are a set of policies and institutional actions that a recipient country has to take before the World Bank approves an aid project. Whereas, benchmarks are not legal conditions and, they are only used as reference frameworks to describe the content and results of an aid project (for details, see Section 2.1). Based on their completely different setting approach as well as the unsettled argument on counting benchmarks as conditions, it is important to analyse them separately where possible.

The next section presents the context, determinants and approach towards the World Bank conditionality. It is followed by a discussion on how China differs from traditional donors in Section 3 and an overview of China's aid spending in Section 4. Section 5 discusses the impact of China's aid on the World Bank conditionality. Section 6 discusses the extension of Hernandez's study and Section 7 explains the research design. Results are presented in Section 8. Section 9 checks the robustness of key results and Section 10 concludes.

1.2. World Bank Conditionality

1.2.1. Context

Conditionality can be defined as "specific-predetermined requirements that directly or indirectly enter into a donor's decision to approve or continue to finance a loan or grant" (Reality, 2007). Foreign aid has progressively become subject to conditionality on the basis of the proposition that aid only works in a good policy environment. The primary motive of specifying conditions on lending is to connect aid to the implementation of critical reforms in the interest of recipient country's economic growth and development.

Conditionality can be influential in meeting developmental targets provided with the aid because it gives an intervening authority to the World Bank when recipients do not act by the agreed terms. The World Bank uses conditionality in order to make sure that the aid it provides help the recipient countries in meeting their development targets

(effectiveness rationale), and to validate that the aid resources are used for their intended purposes (fiduciary rationale).

The World Bank conditionality is classified into two main types: prior actions (binding conditions) and benchmarks (non-binding conditions). Prior actions are legal conditions for disbursement and they can be defined as "a set of mutually agreed policy and institutional actions that are considered critical for achieving the objectives of the project supported by a development policy operation and that a country agrees to take before the Board approves a loan"(Development Policy Operations, 2009). On the other hand, benchmarks are "the implementation progress markers of the program which describe the content and results of the government's program in areas monitored by the Bank" but they are not legal conditions for disbursement (Development Policy Operations, 2009). In other words, disbursements of the World Bank's loan or grants does not depend on the benchmarks and hence, they are not included in the legal agreements as conditions. They are only used as a reference framework and management tool to indicate the overall performance of measures that the recipient countries tend to implement under a policy program.

1.2.2. The World Bank's Changing Approach Towards Conditionality

The World Bank's approach towards conditionality has undergone significant changes. In 1980s and 1990s, the World Bank's use of conditionality was linked to the Structural Adjustment Programmes (SAPs). SAPs are economic policies which the recipient countries have to follow to apply for World Bank aid. SAPs were created with the aim of reducing the recipient country's short- and medium-term fiscal

imbalances. SAPs mostly require the recipient countries to liberalise trade; devaluing currencies against the dollar; lessening the budget gap and removing price regulations and subsidies. In 1999, Poverty Reduction Strategy Papers (PRSPs) replaced SAPs. This is because the World Bank's approach was shifted towards long-term social improvements, i.e., poverty reduction. The World Bank claims that the system of PRSPs has increased recipient country ownership, as they are owned and written by recipient-country governments.

The Y-axis on the left side of Figure 1.1 visualises the average number of World Bank prior actions received by 132 aid-recipient countries across the world over the period 1980-2013. It is apparent that World Bank conditionality has widely fluctuated over this period which further highlights the World Bank's changing approach towards conditionality. Specifically, the World Bank conditionality increases sharply in the 1980s from an average number of 11 prior actions per project in 1980 to a maximum of 47 prior actions on average in 1992 (see Figure 1.1). This upward trend emphasises the heavy conditionality associated with SAPs. Throughout the period of 90s, the average number of prior actions fluctuated in the range of 22 to 37 which is in line with the change in approach from SAPs to PRSPs. Soon after 1999, conditionality started to drop significantly, hitting its low at around 8 prior actions on average in the year 2014. One of the reasons behind this sharp decline in conditionality is the World Bank's aim of streamlining conditionality which resulted in the adoption of good practice principle by the World Bank in 2005. The World Bank moved from adjustment lending to development policy lending by replacing the previous guidelines on conditionality, i.e., privatization, public and financial sector reforms, in favour of

time- and country-specific policies. At this time, donor agencies began to modify their aid-giving principles and their approach towards conditionality in order to increase aid effectiveness. The new approach includes analytical frameworks that increase the ownership of recipient government, adapt conditionality as per the recipient country's economic and political situation, increasing transparency and accountability, and placing a strong focus on outcomes. The World Bank, for instance, formally adopted Good Practice Principle for conditionality which led to the application of numerous good practices towards conditionality. For instance, the 2005 World Bank's conditionality review proposed five good practice principles to strengthen the quality of the conditions associated with the World Bank's lending. It led to the application of five good practice towards conditionality which are summarised below.[2]

1. Ownership: Reinforce country ownership.

2. Harmonization: Agree up front with the government and other financial partners on a coordinated accountability framework.

3. Customization: Customize the accountability framework and modalities of Bank support to country circumstances.

4. Criticality: Choose only actions critical for achieving results as conditions for disbursement.

5. Transparency and predictability: Conduct transparent progress reviews conducive to predictable and performance-based financial support.

The background of this principle was the Paris Declaration on Aid Effectiveness (2005). It provides a series of specific implementation measures to validate that donors and recipients are answerable to each other about their assigned responsibilities and calls for more significant partnership between different parties working on

[2] World Bank (2006). Good Practice Principles for the Application of Conditionality: A Progress Report. Operations Policy and Country Services.

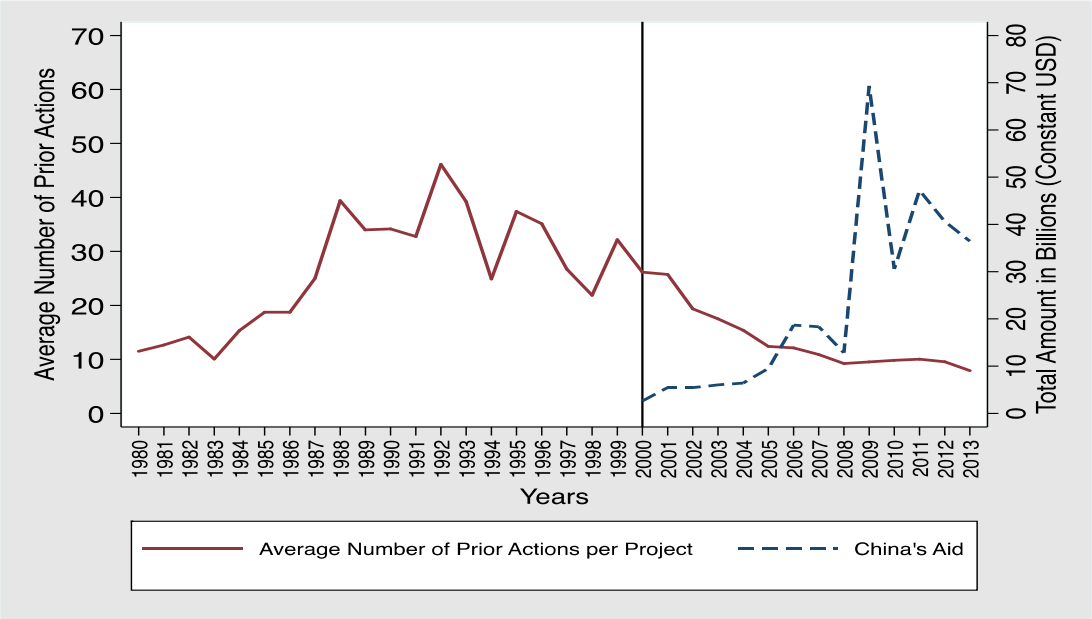
international aid and development. Later in 2008, at the Third High Level Forum on aid effectiveness, head of multilateral institutions, all major bilateral donors and a wide diversity of stakeholders from around the globe gathered in Ghana and endorsed Accra Agenda for Action (AAA). The main objective of AAA was to reaffirm commitment to the Paris Declaration by further broadening and deepening the agenda of an effective, transparent and accountable aid system.

Besides the World Bank's changing approach towards conditionality, it has been recently argued in the literature that the decline in conditionality could be linked with the emergence of the largest new donor; China, which started to compete with the World Bank aid projects in developing countries (Hernandez, 2017). In order to visualize the increase in China's aid spending, the Y-axis on the right side of Figure 1.1 shows the aid volumes of China.[3] As can be seen from the figure, China had a small aid budget of around 547 million USD in the year 2000. Later, in the mid-2000s, China continued to massively expand its ad budget and its aid spending reached its peak in the year 2009 at around 70 billion USD. This was the year when China's Development Bank (CDB) offered long term loans to national energy companies and government entities in Russia, Turkmenistan, Venezuela, and Ecuador (Downs, 2011). Hernandez (2017) argued that the World Bank delivers aid with significantly lesser conditions to African recipient countries financed by China in order to stay competitive with China's aid. In other words, the World Bank's changing approach towards streamlining conditionality could be considered as the second-order effect of

[3] The data on China's aid spending is only available from the year 2000.

the rising competition for apparently less-conditional aid provision by China. This aspect is discussed in detail in Section 1.5.

Figure 1.1: Average Number of Prior Actions per Project in Aid-Recipient Countries Across the World from 1980-2014, Average by Year

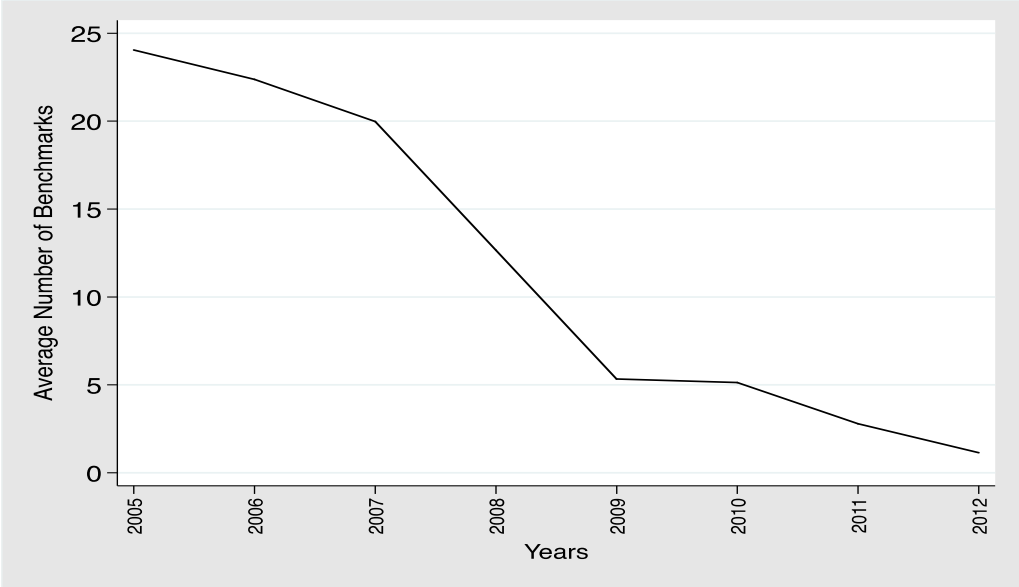


Notes: The maroon solid line shows the average number of the World Bank Prior Actions per project to aid recipient countries across the world over the 1980-2014 period. The dotted line shows the total amount of China's aid to recipient countries across the world over the 2000-2013 period. Figures are reported in constant USD (base year 2014) and scaled to million. Source: World Bank Development Policy Action Database (DPAD, 2016); AidData Core Research Release, Global coverage of Chinese Aid, AidData (2017).

Figure 1.2 visualises the average number of World Bank's benchmarks received by recipient countries across the world over the period 2005-2012. As can be seen from the figure, benchmarks show a declining trend. The highest number of benchmarks imposed in this period is 23, which corresponds to the year 2005. It is important to note that following the Paris Declaration in 2005, the World Bank had already adopted the Good Practice Principle (World Bank, 2006). In the period of seven years, the average number of benchmarks dropped from 23 to 1. This sharp decline signifies two things: first, that the World Bank has started to streamline benchmarks along with prior

actions after 2005; second, benchmarks are not the critical to lending because they are only used as reference frameworks which seems to be the potential reason behind the sharp drop in the average number of benchmarks.

Figure 1.2: Average Number of Benchmarks per Project in Aid-Recipient Countries across the World from 2005-2012, Average by Year



Notes: The figure shows the average number of the World Bank Benchmarks per project to aid recipient countries across world over the 2005-2012 period. Source: World Bank Development Policy Action Database (DPAD, 2016).

1.2.3. Factors Determining Conditionality

The existing literature on conditionality has investigated donor-recipient negotiation by performing comprehensive case studies, such as those unfolding donor-recipient interactions in borrowing countries (e.g. Broad 1988; Klitgaard 1990) or those examining conditionality in structural adjustment programs (e.g. Killick 1998; Mosley et al., 1991). Researchers started to incorporate a bargaining perspective into cross-country analyses of aid projects after the 2000s. For instance, Dreher (2004) did the

pioneering work on explaining the process behind determining IMF conditionality and the relative bargaining power of recipients.

It has been argued in the literature that three sides participate in the negotiation of a World Bank development project, namely recipient-country technocrats, development agency staff and major shareholders, and conditionality reflects the outcome of bargaining between these three relevant actors (Hernandez, 2017). The theory assumes that the actors involved in the negotiations over aid projects are rational actors, and they have distinct preferences over the imposition of conditionality. All three actors share the common interest of promoting growth and development in the recipient countries in the long run, but their short-term interests may vary. As discussed before, the World Bank seeks to implement conditionality as a tool to increase the effectiveness of its development projects. Nevertheless, recipient's bargaining power is a potential constraint on the World Bank's ability to impose its desired level of conditionality.

In much of the public debates on foreign aid, recipient countries are often portrayed as helpless when dealing with influential international financial agencies, and they are described as being forced to accept conditional loans. In reality, however, recipients have the ability to revise conditionality in their favour or to reject an aid agreement if no-agreement outcome gives a higher utility to the recipient (Dreher, 2004). Whereas, recipient governments share the long-term aim of economic development with the shareholders and the World Bank, in short run they seek to achieve two goals: to stay in power, and to implement their preferred policies. They often have incentives to

avoid reforms due to significant political costs. Recipients generally prefer less conditionality than the World Bank's ideal level and will seek to decrease the number of conditions during the negotiation process. There are various determinants of recipients' bargaining power, for instance, economic and political situation of a recipient country. Conditionality links aid projects to reforms that are considered essential for the recipient's economic growth and development. The better the economic and political situation of a country, fewer reforms will be needed and hence, the stronger the bargaining position of the recipient country to negotiate over conditionality (Dreher, 2003). Alongside economic and political situation, an important factor determining their bargaining power is the supply of aid resources from other donors to fulfil their total demand for aid. This aspect is discussed in Section 5.

1.3. Some Characteristics of China's Aid in Contrast with Traditional Donors

1.3.1. Transparency

Traditional donors publicly release detailed and timely information on aid volume, and, when available, results of aid spending in order to enable precise accounting and audit by recipient countries. In contrast, China does not keep data on its aid as defined by the OECD standards, which breaks down where foreign aid goes, and what it is used for. There is a lack of information on the negotiation process of an aid project between the recipients and the Chinese government. Although this data must surely be

available within the Chinese administration, it is not made available publicly; at least not systematically.

In response to the persistent criticism about a lack of transparency, the Chinese government released the first White Paper on foreign aid in 2011 by the Information Office of the State Council. By disclosing information on the overall volume of aid, the paper has finally provided the world with the first official figures on China's aid: "By the end of 2009, China had provided a total of 256 billion yuan in aid to foreign countries" (State Council, 2011). The paper broadly disaggregates the total amount of aid into grants, interest-free loans and concessional loans. However, it provided no information on how much aid is going to which recipient countries. Three years after the publication of the first White Paper, State Council of China issued the second White Paper on China's foreign aid on July 10, 2014 (State Council, 2014). While the release of the two White Papers have improved the information base on which research on China's aid may be conducted, it was still nearly impossible to fully track the amount and recipients of China's yearly aid allocations.

Later in 2013, Strange and co-authors' at AidData has fully uncovered how much money China gives in aid to recipient countries across the globe. The AidData team uses an open-source and innovative data collection methodology called Tracking Underreported Financial Flows (TUFF) to capture China's aid spending at the project level from 2000-2014. The TUFF methodology synthesizes information from several sources: news reports in English and Chinese language; Chinese ministries, embassies, economic and commercial counsellor offices; aid and debt management systems of

finance, and planning ministries in recipient countries; case study and surveys undertaken by scholars and non-government organisations (NGOs). In contrast with the total aggregated aid figures for the years 2011 and 2014 provided in China's White Papers, the TUFF methodology has enabled the researchers at AidData to publish a country-by-country breakdown of China's aid for the 2000-2013 period. It provided an opportunity to the academic scholars to run the first cross-country regressions on China's aid flows.

1.3.2. Non-Interference Policy

Traditional donor's aid policy is well known for its selectivity and conditionality (Burnside and Dollar, 2000). Recognising the importance of the sound political and economic environment in increasing aid effectiveness; traditional donors have increasingly used conditionality through which aid flows could be curtailed if recipient countries do not implement specific policies. On the other hand, China's aid approach is based on 'non-interference policy', i.e., "willingness to provide aid without Western lectures about governance and human rights" (Economist, 2010). China's foreign aid policies stipulate that it does not impose any political conditions and there is no interference in the "internal affairs of the recipient countries and fully respecting their right to independently choose their own paths and models of development" (State Council, 2014). At a press briefing in April 2011, China's Vice Minister of Commerce, Fu Ziying claimed that "China does not attach any political strings to its aid" (People's Daily Online, 2011). The absence of conditionality makes China's aid attractive to leaders who fear that institutional reforms attached with aid projects might send a negative political signal and the opposition parties might use that against the

government (Mohan and Power 2008; Swedlund 2017). As argued by Brazys and Vadlamannati (2018, p. 5), "... leaders have no incentive to introduce costly and political unpopular economic reforms if they have sufficient fungible resources to maintain support in the short term if Chinese aid allows them to maintain support and power".

Speaker of the Guyana National Assembly, Raphael Trotman, nicely summarizes the attitude of recipient countries toward China's aid:

"*We believe that China has been a very good friend from afar and what is unique about China is that its involvement in Guyana has never been one that sought to interfere with our internal political structure. Other countries give aid with conditions—whether they be on governance, on trafficking in persons or a raft of legislation on social issues. China has never given with conditionalities coming with them, and that is something we appreciate*" (Guyana Times International, 2012).

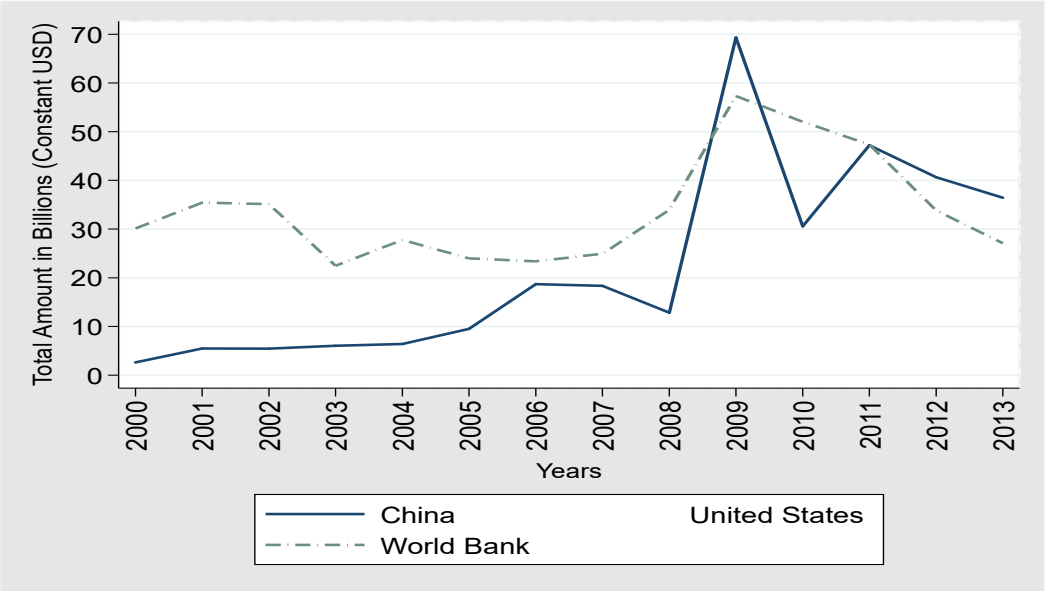
Although China does not set the typical type of conditions as that of traditional donors, their unconditional aid approach does not mean that its aid comes with no strings attached. Wang and Ozanne (2000) elaborated this point by arguing that China's aid is often "tied" and provided on the condition that Chinese firms undertake the aid project. Consequently, the transfer of funds takes place in between the Chinese government banks and Chinese firms. Furthermore, China sends its labour to the recipient countries as well as provide training of the recipients' labour where needed. So, China's aid involves "a complete package of measures, combining technical

solutions with financing backed by state-owned banks, together with Chinese labour to implement them" (Wang and Ozanne, 2000).

1.4. China's Aid Spending

Figure 1.3 compares the aid volumes of China with the most significant traditional donor, i.e., the US and the World Bank. In the initial years, China disbursed very less aid than both the US and the World Bank. Specifically, China started with a small aid budget of around 547 million USD in the year 2000 whereas the aid budget of US and the World Bank stood at 20 and 30 billion USD respectively. Later, in the mid-2000s, China's aid spending becomes closer to the amount spent by the US and the World Bank. Surprisingly, China surpassed the aid budget of both the US and the World Bank and reached its peak in the year 2009 at around 70 billion USD. This was the year when China's Development Bank (CDB) offered long term loans to national energy companies and government entities in Russia, Turkmenistan, Venezuela, and Ecuador (Downs, 2011). CDB has lent Russian oil companies alone 35 billion USD in return for future oil supplies (Downs, 2011). While China's aid spending declined after 2009, it continued to give more aid than the US and the World Bank in the period 2011 to 2013. Notice that the World Bank's aid has also spiked in the year 2009. The reason why the World Bank's aid goes up in line with the increase in China's aid was the deteriorating global conditions and the World Bank's response towards growing needs. The severe food and fuel price crises placed a heavy fiscal, economic and social burden on many developing countries and the World Bank disbursed $32 billion to support the adversely affected developing countries.

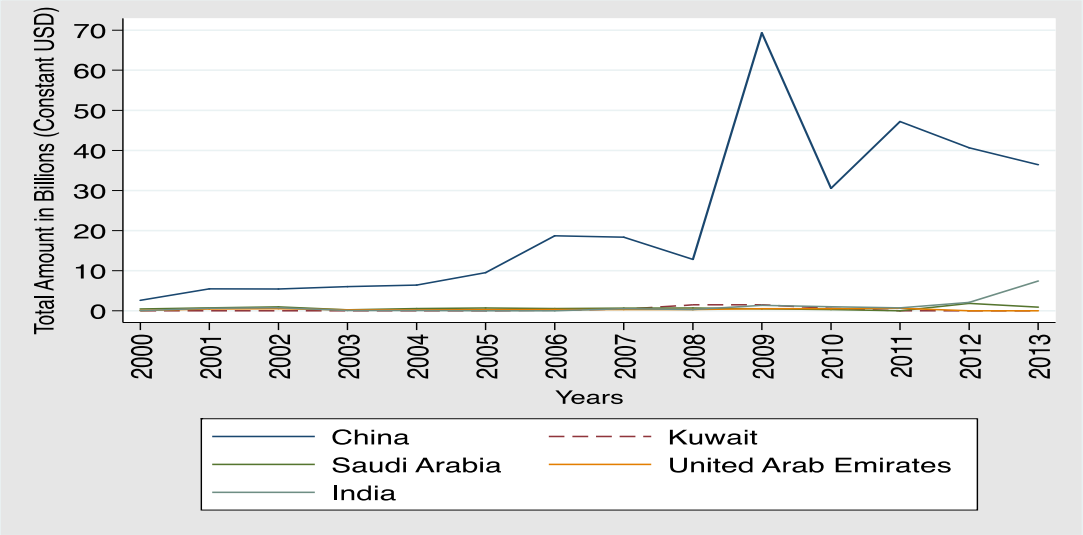
Figure 1.3: How Does China Compare Against the Traditional Donors?



Notes: The figure shows the total amount of aid given by the China, US, and the World Bank to recipient countries across the world over the 2000-2013 period. Figures are reported in constant USD (base year 2014) and scaled to million. Source: AidData Core Research Release, Global coverage of Chinese Aid, AidData (2017).

Figure 1.4 compares the trend of China's aid with other important new donors, i.e., India, Kuwait, Saudi Arabia and UAE. The aid volumes have been plotted for the period of 14 years from 2000 to 2013. The difference in their aid volumes can be clearly seen from the figure, where China is the largest among the group of new donors in terms of its aid volume. Compared to China, the scale of aid from other new donors is quite small.

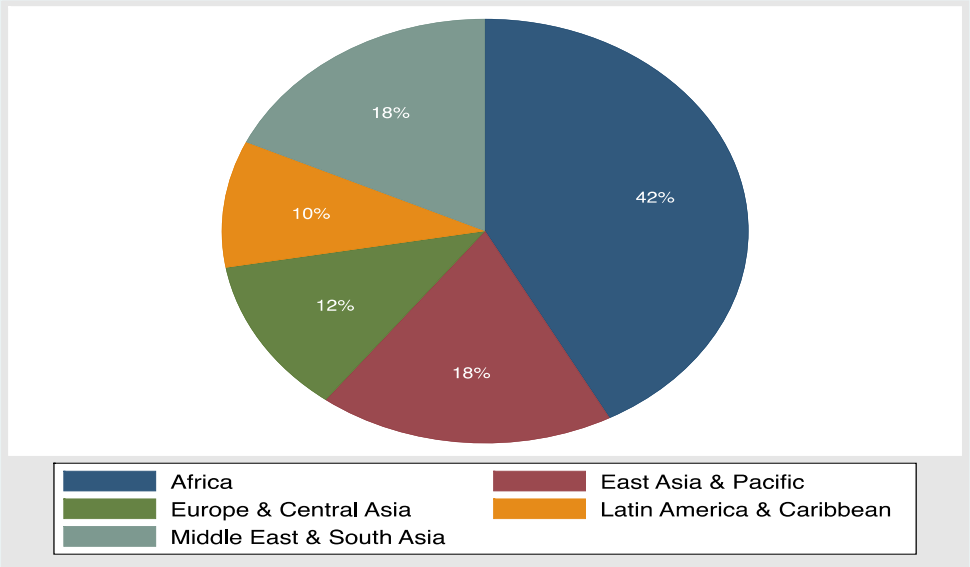
Figure 1.4: How Does China Compare Against the 5 New Donors?



Notes: The figure shows the total amount of aid given by the 5 new donors, i.e., China, Kuwait, India, Saudi Arabia, United Arab Emirates to recipient countries across the world over the 2000-2013 period. Figures are reported in constant USD (base year 2014) and scaled to millions. Source: AidData Core Research Release, Global coverage of Chinese Aid, AidData (2017).

Figure 1.5 illustrates the geographical distribution of China's aid. Africa is the greatest recipient of China's aid, accounting for more than 38% of its total aid volume. It reflects that China has dedicated more considerable attention to the region. Latin America and the Caribbean is the second region most benefited by China's aid. East Asia and Pacific receive less aid than both the Middle East and North Africa and South Asia. Overall, the figure shows that China's aid has a special focus on Africa; nevertheless, it maintains a global outlook, providing aid to all regions.

Figure 1.5: Geographical Distribution of China's Total Aid, 2000-2014



Notes: The figure shows the geographical distribution of China's total aid to 132 aid-recipient countries across 5 regions namely, Africa, Europe and Central Asia, Middle East and South Asia, East Asia and Pacific, Latin America and Caribbean. Source: Global coverage of Chinese Aid, AidData (2017).

1.5. Impact of China's aid on the World Bank Conditionality

There is a strong discourse among scholars on the rise of China's aid and its consequences on the international donor community (Brant, 2013; Chen and Zhang, 2014; Hernandez, 2017). They argue that China is giving competition to traditional donors by providing recipient countries with an attractive source of financing aid projects which does not require reforms to enhance transparency, fiscal efforts and curtailing corruption. The alternative source of apparently unconditional credit from China could improve the bargaining position of recipient countries, influencing the extent to which the World Bank imposes conditionality with aid projects (Hernandez, 2017, p.532). Corkin (2014) interviewed an Angolan civil society representative and a Chinese diplomat in Luanda who commented that: "The World Bank, the IMF are losing to the Chinese, they feel that some of their influence is being taken away by

China" (Corkin, L.J., 2014). Another empirical study by Granath (2016) evaluated China's and DAC aid flows to African countries and found that there is a competition between China and DAC donors to provide aid to the same recipient countries.

Hernandez (2017) constitutes pioneering work of linking the aid activities of new donors in Africa with the World Bank conditionality. He argued that World Bank could react to the additional aid resources from new donors in two ways; First, it may impose more conditions to call reforms if aid from new donors seems to cause debt overhang in recipient countries. Second, it may have to offer aid with fewer conditions for attracting recipients in order to stay competitive with new donors. By analysing the number of conditions per project from the World Bank, Hernandez (2017) found that the World Bank has imposed significantly fewer conditions on its aid to African recipient countries when they are also assisted by China.

Initially, it might not be obvious why the World Bank should have an interest in maintaining its aid volume. Its answer can be found from the literature on the political economy where there has been a broad consensus that all donors, including the World Bank have their own interest for disbursing aid. Dreher (2004), for example, suggests that "the key motivation for the World Bank not to retain its aid resources is the fact that its lending is entirely financed with money from the capital markets". Consequently, the World Bank is under pressure to lend its resources. The authors further argued that "the World Bank's most crucial peer group are private bankers, holding the World Bank's resources will give them the impression that that the staff cannot effectively evaluate the projects at the beginning, which will be detrimental to

the staff's reputation. Thus, the staff members are commonly evaluated according to their ability to lend the money prepared for their region" (Dreher, 2004, p.447). Besides, major stakeholders of the World Bank often have strategic incentives to keep the operations running in recipient countries of their commercial and political interest, i.e., getting favourable votes in United Nations General Assembly (UNGA) (Dreher, Sturm, Vreeland, 2009; Thacker, 1999). As the US is the major shareholder in the World Bank, closer allies to the US are expected to be rewarded with more aid. However, other than the US, the four prominent Board members, i.e., Japan, Germany, France, U.K, also exert influence on the World Bank decisions. Kanbur (2000) provided an example of donors putting pressure on the World Bank by reporting his experience of the World Bank assessment of providing a loan to Ghana:

"*In fact, as the representative of the World Bank on the ground, I came under pressure from several sources, some of them quite surprising, to release the tranche with minimal attention to conditionality. There was a steady stream of private sector representatives, domestic and foreign, arguing for release of the tranche, both because of fears of what macroeconomic disruption would do to the business climate in general, and also because some of them had specific contracts with the government which were unlikely to be paid on time if the government did not in turn get the money from the World Bank and other donors. Next in line were the bilateral donors— even those who had tied themselves to the presumably greater discipline of the World Bank by co-financing. Some of these had fiscal year concerns—they feared the consequences within their agencies of not releasing the funds in the fiscal year for which they were slated. Others worried about a meltdown of the economy if the tranche was not released. Yet others found their projects slowing up because government counterpart funds were not available, and many project agreements stipulate that donor money flows in a fixed relationship to government contributions."*

(Kanbur, 2000, p.414)

1.6. Extension of Hernandez's Study

Hernandez (2017) investigated the impact of new donor's aid on cumulative World Bank conditions. Specifically, he hypothesized that:

Hernandez's Hypothesis: *The World Bank will revise its conditionality downwards if the presence of new donors creates an increase in supply of development resources in the recipient country and upwards if it does not.*

This chapter provides an extension of Hernandez's analysis with the objective of learning the strengths and shortcomings of his pioneering work on the impact of China's aid on the World Bank conditionality and to check the robustness of his results. This chapter adds the following three extensions to Hernandez's analysis:

1.6.1. Better Data Coverage

The chapter extends Hernandez's hypotheses to other countries beyond Africa by using the data on global coverage of China's aid. AidData first released its dataset in 2014 on 1,952 China's aid projects in 50 African countries. Hernandez (2017), among others, has used this dataset to analyse the allocation of China's aid in African countries. In October 2017, AidData released the global coverage of China's aid covering 4300 projects in 140 developing countries across six regions. In this latest version, not only has AidData expanded the data coverage but they also have improved the quality of data by clearly identifying the suspended or cancelled aid flows which should not be included in any research analysis in order to avoid double counting. This

chapter extends Hernandez's dataset on 1952 aid projects in Africa to 4300 aid projects on recipient countries across the world.

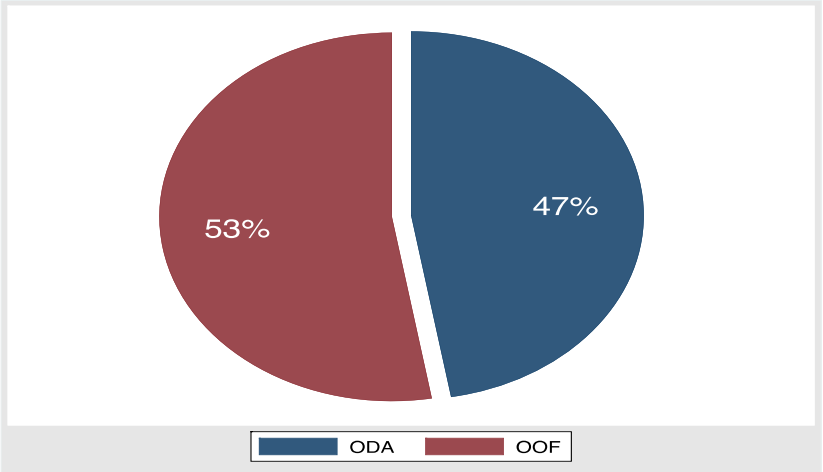
1.6.2. Disaggregation of China's Aid into ODA and OOF

Hernandez has defined China's aid in terms of ODA. In contrast to Hernandez (2017), the study uses a relatively broader definition of China's aid which includes both development and commercial aid. AidData has classified China's aid into ODA and OOF based on some common characteristics, for example, the interest rate charged, the grace periods offered or the intent of the aid project (i.e., commercial, representational or developmental). For a project to be categorised as ODA in AidData database, the intent field must be "development", and the flow type field must be grant-like or a concessional loan. Whereas, for a project to be categorised as OOF, the intent must be primarily "commercial or representational" and include less than 25% concessionality.

As can be seen from Figure 1.6, a larger proportion of China's aid (53%) is distributed as OOF. The dominance of OOF in China's aid budget indicates the importance of separately analysing ODA and OOF, since the sole analysis of ODA or OOF will not paint an accurate picture of China's aid. As argued by Dreher et al., (2018), "much of the controversy about China's aid stems from a failure to distinguish between China's ODA and OOF." (p.182). Therefore, comparing the effects of China's ODA and OOF should help in investigating whether they have a distinctive impact on the World Bank conditionality; the former being more concessional and development-oriented and the later less concessional and more commercial oriented.

Moreover, the World Bank might react differently to different types of China's aid based on their concessional level. The level of concessional element of an aid project is determined by its grant element. Consequently, we expect that the larger the grant element of China's aid projects, the more the recipient countries will value the transfer and thus the lesser number of conditions have to be offered by the World Bank in order to attract the recipients. Whereas, we expect the decrease in conditions would be lesser for less concessional forms of China's aid, i.e., OOF.

Figure 1.6: Total China's Development Aid (ODA) and Commercial Aid (OOF), 2000-2014



Notes: The figure shows the total proportion of ODA and OOF in China's total aid given to 131 recipient countries. Source: AidData (2017).

1.6.3. Disaggregation of the World Bank Conditionality into Prior Actions and Benchmarks

Our hypotheses differentiate from Hernandez (2017) by disaggregating conditionality into prior actions (binding conditions) and benchmarks (non-binding conditions). The rationale behind this disaggregation is to see if China's aid has a differential impact on

prior actions and benchmarks given their different scopes. Prior actions, for example, involve critical reforms and are expected to produce significant institutional and economic changes once implemented, while benchmarks do not require any economic or political effort by the recipient country (Lamdany and Hamann, 2008). In a World Bank aid program approved in Peru in 2002, the government agreed on a prior action of privatisation of its electricity generation company, involving tough domestic negotiations. Whereas, when Lesotho obtained an aid project in 2001, it agreed on a benchmark in the form of releasing its monthly budget execution report (a relatively easy condition to fulfil).

Following Hernandez, we assume that China imposes less or no conditions with the aid offered. We argue China's aid creates an increase in the supply of development resources in recipient countries. This additional supply of aid will enable recipient countries to be more selective about the source and conditions of aid they accept, increasing their bargaining power with traditional donors. In response to this increased competition, the World Bank will decrease the number of prior actions attached with its projects because recipient countries tend to negotiate over a lesser number of prior actions to be attached with aid projects. On the other hand, as benchmarks are non-binding conditions and recipient countries are indifferent to them, the World Bank does not need to change the number of benchmarks. Hence, we hypothesise that:

Hypothesis I. *An increase in the supply of China's aid should reduce the number of prior actions attached to new World Bank aid projects.*

Hypothesis II. *An increase in the supply of China's aid should have no effect on the number of benchmarks attached to new World Bank aid projects.*

1.7. Research Design

To empirically test the postulated hypotheses, the influence of China's aid on the World Bank's decision to impose prior actions and benchmarks would be analysed on 132 aid-recipient countries.[4] The analysis focus on the 2001-2014 period and the unit of analysis is the recipient country-year.[5] The panel is unbalanced because some of the data is not available for all countries or years. Our basic econometric models read as follows:

$$Avg.PriorActions_{it} = \alpha_0 + \alpha_1 WBAid_{it} + \alpha_2 Avg.Fields_{it} + \alpha_3 China'sAid_{it-1} + \alpha_4 X_{it} + \lambda_i + \gamma_t + \varepsilon_{it} \quad (1)$$

$$Avg.Benchmarks_{it} = \alpha_0 + \alpha_1 WBAid_{it} + \alpha_2 Avg.Fields_{it} + \alpha_3 China'sAid_{it-1} + \alpha_4 X_{it} + \lambda_i + \gamma_t + \varepsilon_{it} \quad (2)$$

1.7.1. Dependent Variable

The dependent variable is the respective average number of prior actions (Avg. Prior Actions), and benchmarks (Avg. Benchmarks) attached to the World Bank projects

[4] The study includes only those countries which have at least received an aid project from China at any point in time during the period of analysis.

[5] For testing the second hypothesis on benchmarks, the analysis focuses on the period 2006-2012 as the data on benchmarks is only available for this period. The comparable number of years were also tested for prior action and the results stay the same.

that a recipient country *i* receives in a year *t* (i.e., number of prior actions and benchmarks/number of projects). As Dreher and Jensen (2007) noted, it is difficult to measure and compare the degree of severity of conditions in an objective way, so it is common to use the number of conditions as a proxy to measure the extent of their stringency (consistent with Gould, 2003; Hernandez, 2017). As the number of aid projects that a country receives is an important indicator of the number of conditions negotiated; hence the dependent variable is constructed as the average number of prior actions and benchmarks to account for the possibility of a country receiving more conditions due to more projects than comparable recipient countries. The data on prior actions and benchmarks is obtained from the World Bank's Development Policy Action Database (DPAD).

1.7.2. Explanatory Variables

Our primary variable of interest is China's Aid. Throughout the study, China's 'Official Finance' has been used as a broader definition of China's aid. It includes concessional and non-concessional sources of funding from Chinese government institutions. The variable China's aid measures the cumulative amount of China's aid provided to recipient country *i* in period *t-1*. Following Hernandez (2017), this measure has been expressed in logarithmic form.[6] In order to avoid the potential endogeneity and reverse causality, this measure has been lagged by one year.[7] The data

[6] To keep the zero observations, a value of 1 has been added before taking logarithms.

[7] In addition, a placebo test is conducted to confirm that reverse causality is not a major concern in our empirical strategy by making use of the following regression equation: $China'sAid_{it-1} = \alpha_0 + \alpha_1 Avg.PriorActions_{it} + \alpha_2 WBAid_{it} + \alpha_3 Avg.Fields_{it} + \alpha_4 X_{it} + \lambda_i + \gamma_t + \varepsilon_{it}$. The coefficient α_1 is not significant at conventional levels suggesting that aid allocation decisions by China is not influenced by the World Bank loan stringency in the preceding period. Therefore, variable measuring China's aid is not expected to be endogenous. Results are provided in Appendix.

on China's aid has been obtained from the dataset on Global Coverage of Chinese Aid (AidData, 2017). The data on China's aid comes with the caveat that 30% of the projects in our sample have no information on their financial value either because they were non-quantifiable or AidData couldn't trace the exact amount of the project. These values are left as missing in our dataset. There are some recipient country-pairs for which the data has no information on China's aid. We have treated these missing values as zeros assuming that AidData has collected the most comprehensive project level data on Officially financed projects.

Next, to explain the variation in conditionality due to the size of the project, the analysis includes the magnitude of the World Bank aid (*WB Aid*). It corresponded to the size of the World Bank aid project received by recipient country in a year in terms of dollar amounts. Bigger World Bank projects are expected to be offered with more conditions, as it is likely that larger projects demand greater reform (McLean and Schneider, 2014; Hernandez, 2017).

It is also anticipated that a World Bank project targeting various fields is more likely to include a large number of conditions; hence the number of fields (Avg. Fields) covered by conditions in each World Bank project to a recipient country has been included. Fields represent the economic sectors that are impacted by the reform measures (prior actions) supported by the project.

1.7.3. Control Variables

To reduce the likelihood of omitted variable bias, the study employs a standard set of control variables in line with Hernandez (2017). First, general control variables are included to reject the economic and political situation of the recipient country since the literature indicates that good economic and political conditions reduce the scope of conditionality (Dreher, 2009; Hernandez, 2017). As discussed above, conditionality links aid projects to reforms that are considered essential for the recipient's economic growth and development. The better the economic and political situation of a country, fewer reforms will be needed and hence, the stronger the bargaining position of the recipient country to negotiate over conditionality (Dreher, 2003). Some standard measures of economic conditions are the growth rate of GDP per capita, government consumption expenditures, external debt, and international reserves. Each of these variables is expressed as a percentage of GDP except for international reserves.[8] A negative correlation between the growth rate of GDP per capita and number of conditions is expected since richer countries are usually in a better bargaining position over the negotiation of conditionality (Steinwand and Stone, 2008; McLean and Schneider, 2014). The World Bank is also expected to demand fewer conditions from countries with higher international reserves. In contrast, higher government consumption and a higher government debt burden will trigger more conditions to be included in an aid agreement to incentivize sustainable public finances and the recipient country's ability to pay back the loans in the future. Inflation is included as an indicator for the instable economic situation and thus the need for reforms. We

[8] Following Hernandez (2017), reserves are expressed in logarithmic form to deal with over-dispersion in the distribution.

expect that if the inflation rate is high prior to the World Bank aid agreement, it will cause a relatively larger number of prior actions to be included in the aid project. The data on all the indicators mentioned above have been taken from the World Bank's World Development Indicators (WDI).

The political situation is measured by the extent of good governance in a recipient country (Democracy). We use the Polity IV dataset a proxy for good governance in our model. The data is available across recipient countries and time. The variable measures the level of democracy in a country, ranging from -10 (autocratic) to 10 (fully democratic). Data is from the Polity IV dataset.

In terms of geopolitics, the study uses a country's voting behaviour in the United Nations General Assembly (UNGA) as a proxy to measure how closely a recipient country is allied with the US- the largest shareholder at the World Bank. It measures Lijpharts index of agreement between the recipient country and the US (Strezhnev and Voeten, 2013). This equals one if a country always agrees with the US and zero if it always votes the other way. If the US votes yes and the recipient country abstains, the vote is coded as 0.5. Data on UNGA voting affiliation has been taken from Strezhnev and Voeten (2013). Various empirical studies show that closer allies to the US have been compensated with fewer conditions attached to World Bank and IMF aid (e.g., Alesina and Dollar, 2000; Andersen et al., 2006; Barro and Lee, 2005; Kilby, 2009). According to these studies, the US uses its influence in the World Bank and IMF to enforce its political agenda and reward countries supportive of US foreign policy. The US are, however, not the only country influencing the World Bank's decisions. The

other four permanent members of the Board, i.e., Japan, Germany, France, U.K, exert influence as well.

All control variables are lagged by one year. This is because the decision of the Board to impose conditionality is based on observed information available at the time of making the lending decision from the previous year. λ_i and γ_t represent country and year fixed effects, respectively. A description of all variables along with the data sources is presented in Table 1.1 and descriptive statistics are presented in Table 1.2.

Table 1.1: Variable Description and Sources

Variables	Description	Data Source
Avg. Prior Actions	Average number of World Bank prior actions per project delivered to a recipient country in a year.	Development Policy Action Database (2017)
Avg. Benchmarks	Average number of World Bank benchmarks per project delivered to a recipient country in a year.	Development Policy Action Database (2017)
China's Aid (log, t-1)	Cumulative amount of China's aid that a recipient country has received in a year in constant dollars.	Global Coverage of Chinese Aid (2017)
World Bank Aid (log)	Cumulative amount of World Bank aid that a recipient country has received in a year in constant dollars.	Tierney et al., (2011)
Avg. Fields	Average number of fields covered per project that a recipient country has received in a year.	Development Policy Action Database (2017)
CPI Growth (t-1)	Inflation rate as measured by the CPI, transformed by x/(100+x).	World Development Indicators (2017)
Investments (% of GDP, t-1)	Gross fixed capital formation as a percentage of GDP.	World Development Indicators (2017)
Reserves (% of GDP, t-1)	Total reserves including gold as a percentage of GDP.	World Development Indicators (2017)
GDP Growth (t-1)	Growth rate of GDP per capita.	World Development Indicators (2017)
Gov. Expd. (% of GDP, t-1)	Government expenditures as a percentage of GDP.	World Development Indicators (2017)
Int. Reserves (log, t-1)	International reserves as a percentage of total external debt.	World Development Indicators (2017)
Investments (% of GDP, t-1)	Investment as a percentage of GDP.	World Development Indicators (2017)
Ext. Debt (% of GDP, t-1)	External debt as a percentage of GDP.	World Development Indicators (2017)
UN Voting Aff. US (t-1)	Voting compliance mean with the US in the UNGA by a recipient country in a year from 0 (no compliance) to 1 (full compliance).	Strezhnev and Voeten (2013)
Democracy (t-1)	Democracy index, from -10 (full autocracy) to 10 (full democracy).	Marshall and Jaggers (2000)
India's Aid (log, t-1)	Cumulative amount of India's aid that a recipient country has received in a year in constant dollars.	Tierney et al., (2011)
Kuwait's Aid (log, t-1)	Cumulative amount of Kuwait's aid that a recipient country has received in a year in constant dollars.	Tierney et al., (2011)
Saudi Arabia's Aid (log, t-1)	Cumulative amount of Saudi Arabia's aid that a recipient country has received in a year in constant dollars.	Tierney et al., (2011)
U.A.E's Aid (log, t-1)	Cumulative amount of U.A.E's aid that a recipient country has received in a year in constant dollars.	Tierney et al., (2011)

Table 1.2: Summary Statistics (2000-2014)

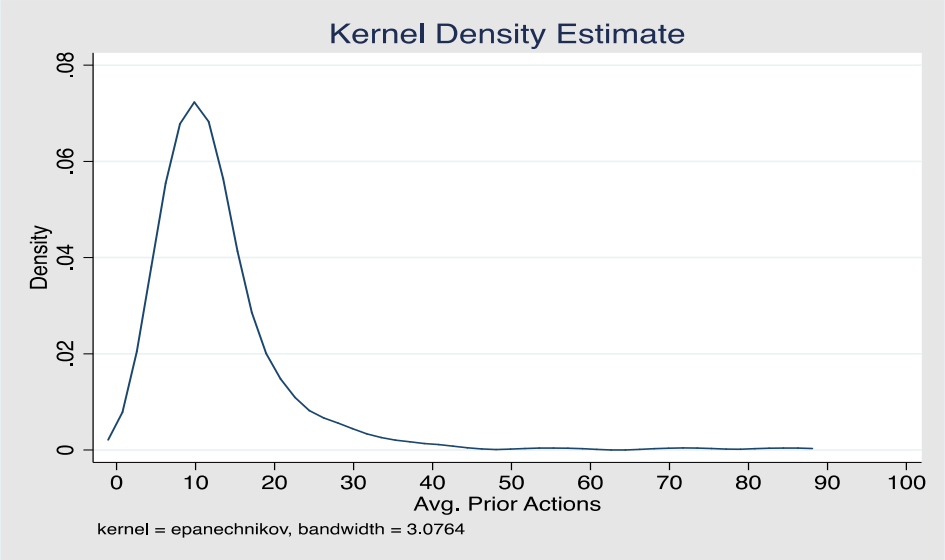
Variables	Obs	Mean	Std. Dev.	Min	Max
World (132 Countries)					
Avg. Prior Actions	517	12.80851	8.989663	2	85
Avg. Benchmarks	341	11.05279	17.92657	0	101
China's Aid (t-1)	1,904	7.715131	8.74209	0	8.14e+09
China's ODA (t-1)	1,904	7.105111	8.968444	0	3.79e+10
China's OOF (t-1)	1,904	4.22686	7.979403	0	6.21e+10
Avg. Fields	514	4.546206	2.313953	1	17
World Bank's Aid	1,904	12.35264	8.772232	0	9.51e+09
GDP per Capita (log, t-1)	1,779	7.296967	1.100178	4.631275	10.03199
GDP Growth (t-1)	1,764	2.968282	6.466724	-62.22509	122.9683
CPI Growth (t-1)	1,557	0.070958	0.0827209	-0.2211299	0.8371089
Gov. Expd. (% of GDP, t-1)	1,513	15.12422	8.548765	0.9517466	135.794
Int Reserves (log, t-1)	1,523	18.73697	19.10587	0.0306302	318.5605
Investments (% of GDP, t-1)	1,505	22.07075	8.245953	0.2928698	68.02272
Ext. Debt (% of GDP, t-1)	1,594	55.64963	48.30084	0	485.6684
UN Voting Aff. US (t-1)	1,698	0.157903	0.1115222	0	1
Democracy (t-1)	1,522	2.280552	5.954418	-10	10
Africa (53 Countries)					
Avg. Prior Actions	243	11.26749	5.158485	2	35
Avg. Benchmarks	159	13.24528	21.68436	0	101
China's Aid (t-1)	575	2.36E+08	6.39E+08	75487.78	8.14E+09
China's ODA (t-1)	575	9.90E+08	3.06E+09	0	3.79E+10
China's OOF (t-1)	575	9.31E+08	4.10E+09	0	6.21E+10
Avg. Fields					
World Bank's Aid	240	4.457639	2.245909	1	17
GDP per Capita (log, t-1)	532	2.27E+08	3.45E+08	32456	3.99E+09
GDP Growth (t-1)	749	6.787445	1.102142	4.631275	10.03199
CPI Growth (t-1)	729	2.246174	7.616883	-62.22509	122.9683
Gov. Expd. (% of GDP, t-1)	688	0.0672014	0.0892837	-0.1086185	0.8371089
Int Reserves (log, t-1)					
Investments (% of GDP, t-1)	668	14.57847	6.413764	0.9517466	69.54283
Ext. Debt (% of GDP, t-1)	622	18.27737	25.32969	0.0306302	318.5605
UN Voting Aff. US (t-1)	670	20.88453	8.433473	0.2928698	59.72307
Democracy (t-1)	701	63.19732	62.14291	2.500813	485.6684

1.7.4. Estimator

Given the count nature of the dependent variable, the basic methodology clearly rests on Poisson regression models (PRM); this rejects the fact that count outcomes are discrete and violate the underlying assumption of Ordinary Least Square (OLS), i.e., the outcomes are not continuous, and the residuals may not have a bell-shaped pattern. The Poisson regression model is so named because the error process is assumed to follow the Poisson distribution.[9] In the PRM, the mean of the distribution is a function of the independent variables, and the conditional mean of the dependent variable must be equal to the conditional variance. However, if this is not the case, the Negative Binomial Regression (NBRM) can be used for over-dispersed count data. NBRM differs from the PRM in that it estimates a parameter which captures and tests for the over dispersion of the data. In other words, PRM assumes that the dependent variable is equi-distributed while the NBRM incorporates the overdispersion as a parameter in the model.[10] Figure 1.7 depicts the kernel density estimate of the total number of World Bank prior actions per project, using an epanechnikov weight and a hundred grid points. Highest densities can be noted for prior actions in the range of 5 and 15. Moreover, only a small number of projects have more than 40 prior actions, and the distribution reaches its maximum at 85 prior actions. This characteristic shows that potentially a poisson distribution fits well with the data.

[9] Hausman et al. (1984), Cameron and Trivedi (1986, 1998), and Winkelmann (2003).
[10] Over-dispersion can be described as the presence of higher variability in a data set than expected under the assumed distribution.

Figure 1.7: Kernel Distribution of Average Number of World Bank Prior Actions per project in 132 Aid-Recipient Countries, 2000-2014



Notes: The figure shows the Kernel distribution for the average number of the World Bank Prior Actions per project to aid-recipient countries across world over the 1980-2014 period.
Source: World Bank Development Policy Action Database (DPAD, 2016).

To further evaluate the adequacy of Poisson specifications, we look at descriptive statistics in Table 1.2 for the average number of prior actions and benchmarks. It, however, shows that the data is likely to be over-dispersed as the variance for the average number of prior actions and benchmarks is far greater than their mean values (see Table 1.2). We then performed Cameron and Trivedis (CT) test (1990) to formally check overdispersion. The CT test confirmed the presence of overdispersion and; hence we continue with the negative binomial regression. Standard errors are clustered by recipient country to control for potential heteroscedasticity.

1.8. Results

The empirical analysis is divided into two parts. The first part investigates the impact of China's aid on prior actions, while the second part investigates its impact on benchmarks. This disaggregation would allow us to check whether China's aid has a differential effect on prior actions and benchmarks given their completely different nature, setting approach and purpose.

1.8.1. Prior Actions

The analysis begins with estimating the impact of China's aid on an average number of prior actions (*Avg. Prior Actions*) in 52 aid-recipient countries in Africa for the 2000-2014 period (see *Model 1*). The dependent variable measures the average number of prior actions per World Bank project, an African country *i* receives in year *t*. The results report the marginal effects at the mean of each variable. The standard errors are heteroskedasticity-robust and clustered by the recipient country.

The marginal effect of total China's aid in *Model 1* turned out to be negative and significant at the five percent level (see Table 1.3). In particular, a one percent increase in China's aid is expected to decrease the average number of prior actions imposed on African recipient countries by 0.06, ceteris paribus, in the following year. This finding is consistent with Hernandez's results limited to China's ODA. However, the magnitude of the coefficient is much larger (i.e. 0.15) in Hernandez's results. The difference in magnitude has potentially arisen because of the data updates discussed in Appendix A.1.

There are two possible interpretations of the negative relationship between China's aid and prior actions. Firstly, from the recipient's perspective, the availability of additional aid resources from China strengthens the bargaining position of recipients in the negotiation over prior actions. Secondly, from the World Bank's perspective, the additional supply of China's aid increases competition in the international aid market and the World Bank reacts to it by offering aid with fewer prior actions.

As a next step, we disaggregate China's aid into ODA and OOF. This is because the World Bank might react differently to different types of aid based on their concessional level or grant element. Consequently, we expect that the larger the grant element of China's aid projects, the more the recipient countries will value the transfer and thus the lesser number of prior actions have to be offered by the World Bank in order to attract the recipients. Whereas, we expect the decrease in prior actions would be lesser for less concessional forms of China's aid, i.e., OOF. To account for this discrepancy, *Model 2* estimates the individual impact of China's ODA and OOF on the World Bank's prior actions. This is in contrast with Hernandez's study which has only counted aid as strictly ODA. As can be seen from *Model II*, we find significant negative effects of China's ODA on prior actions. Specifically, a one-percent increase in China's ODA will reduce the average number of prior actions by 0.07 in the following year. On the other hand, we do not find any significant impact of OOF on prior actions.[11] Overall, it indicates that the World Bank offers aid with fewer prior actions to countries receiving concessional lending (i.e., ODA) from China.

[11] The results qualitatively remain the same if we instead analyse separate models for ODA and OOF. Results are available upon request.

Next, we extend the analysis to 132 recipient countries around the world in receipt of China's aid (*Model 3*) in order to see if the above results can be generalised globally to all the countries in receipt of China's aid. The coefficient on China's aid appears with a negative sign; however, it is not significantly different from zero. In addition, the coefficients on disaggregated form of China's aid, i.e., ODA and OOF also remains insignificant (*Model 4*). It indicates that our key results (as well as Hernandez's findings) should be interpreted with caution as they are only limited to African countries receiving aid from China. Perhaps, China's particular focus in Africa and it's rising percentage of aid in this region has induced the World Bank to lower its conditionality. As shown in Figure 1.5, 42% of China's aid is directed towards Africa, suggesting that the World Bank is facing a tougher competition to maintain its aid volume in Africa. Some African leaders have also reported on various occasions that they are more comfortable with receiving China's aid which has less performance-based conditions attached (see Section 1.3.2.). Moreover, the high level of poverty in the region has attracted large volume of aid from all other donors. Almost all bilateral and multilateral donors have given high priority to using aid resources to help solve Africa's poverty problems. The willingness of China as well as other donors in providing aid to Africa, alongside the high poverty level in the region, seems to build up a pressure on the World Bank to be particularly cautious of its lending instruments in Africa. For instance, the relatively weaker institutional capacity in Africa constraints the World Bank's expectations regarding the effectiveness of its aid projects. Whereas, other regions have relatively stronger institutional capacity to absorb aid flows as well

as the ability to sustain the investment and economic policies afterwards. Moreover, other regions have relatively lesser financial options to fulfil their aid-based needs as China as well as other donors provide a relatively low percentage of their aid to these regions. Potentially, the World Bank could, therefore, have a stronger bargaining position to negotiate over a higher level of conditionality in aid agreements with countries situated in non-African regions.

Note that our sample in *Model 3 and 4* consist of recipient countries all over the world, yet it did not allow for any regional heterogeneity. Consequently, *Model 5* introduces slope and intercept dummies for the five regions receiving China's aid namely: Europe and Central Asia, East Asia and Pacific, Latin America and Caribbean, Middle East and South Asia and Africa.[12] The conjecture was that China's aid is disproportionately directed towards some regions, consequently, the World Bank might impose a different level of conditionality across regions. To avoid falling into the dummy variable trap and to avoid the problem of collinearity, we dropped the dummy for Africa.[13] All of the geographical intercept dummies except for the Middle East & South Asia turned out insignificant. The negative and statistically significant coefficient on the Middle East & South Asia suggests that if a country is situated in the Middle East & South Asia, the World Bank will impose significantly fewer prior actions on it as compared to Africa, i.e., on average it will receive 1.09 less prior

[12] The study used the World Bank's geographical classification of countries; however, North and Sub-Saharan Africa was merged into one in order to make the African countries comparable with Hernandez (2017).

[13] The Middle East and North Africa were grouped as one region due to the limited availability of data on the countries situated in these regions. This change in classification did not affect the results. Results for the original World Bank classification are available upon request.

actions than Africa. As concerns the slope dummies, none of them are statistically different from zero confirming that our key results do not suffer from regional bias.

Table 1.3: China's Aid and World Bank Prior Actions, Negative Binominal, 2001-2014

	Africa		World		
	Model 1	Model 2	Model 3	Model 4	Model 5
China's Aid (log,t-1)	-0.0608**		0.0229		-0.0004
	(0.0275)		(0.5923)		(0.9240)
China's ODA (log,t-1)		-0.0776**		-0.0151	
		(0.0106)		(0.6881)	
China's OOF (log,t-1)		0.0202		0.0127	
		(0.6422)		(0.7847)	
Avg. Fields	0.4754**	0.4738**	0.7452***	0.7474***	0.0642***
	(0.0142)	(0.0198)	(0.0000)	(0.0000)	(0.0000)
World Bank's Aid (log)	0.1243*	0.1243**	0.0258	0.0265	0.0016
	(0.0540)	(0.0486)	(0.5521)	(0.5475)	(0.7038)
GDP per Capita (log,t-1)	4.1384*	4.2080*	0.5096	0.3333	-0.0045
	(0.0782)	(0.0572)	(0.7324)	(0.8142)	(0.9724)
GDP Growth (t-1)	0.1796	0.1911	0.1289*	0.1295*	0.0128*
	(0.3121)	(0.2733)	(0.0929)	(0.0906)	(0.0621)
CPI Growth (t-1)	-0.3419	-0.6862	7.4631	7.5494	0.6599
	(0.9604)	(0.9226)	(0.2930)	(0.2860)	(0.2246)
Gov. Expd. (% of GDP,t-1)	-0.187	-0.1858	0.0809	0.0698	0.0064
	(0.2167)	(0.2057)	(0.6014)	(0.6423)	(0.6208)
Int Reserves (log, t-1)	0.1409*	0.1457*	0.0960*	0.0849	0.0085*
	(0.0544)	(0.0528)	(0.0786)	(0.1396)	(0.0703)
Investments (% of GDP,t-1)	0.1689**	0.1708**	-0.0536	-0.0516	-0.0015
	(0.0465)	(0.0427)	(0.4698)	(0.4758)	(0.8054)
Ext. Debt (% of GDP,t-1)	0.0099	0.0099	-0.0088	-0.0102	-0.0012
	(0.4527)	(0.4385)	(0.4852)	(0.4124)	(0.2787)
UN Voting Aff. US (t-1)	-14.6509	-14.8171	-4.902	-4.3757	-0.2957
	(0.1812)	(0.1624)	(0.4926)	(0.5221)	(0.6326)
Democracy (t-1)	0.2286	0.2531	0.3523**	0.3567**	0.0312**
	(0.2357)	(0.1636)	(0.0173)	(0.0133)	(0.0147)
East Asia & Pacific					0.3351
					(0.2517)
Europe & Central Asia					-0.1412

Table 1.3 (continued)					
					(0.6316)
Latin America & Caribbean					-0.3453
					(0.1852)
Middle East & South Asia					-1.0945***
					(0.0000)
East Asia & Pacific * China's Aid (log,t-1)					0.0125
					(0.1880)
Europe & Central Asia * China's Aid (log,t-1)					-0.0082
					(0.3260)
Latin America & Caribbean * China's Aid (log,t-1)					0.0184
					(0.1047)
Middle East & South Asia * China's Aid (log,t-1)					-0.0006
					(0.9566)
N	121	121	350	350	350

Notes: The dependent variable measures the average number of prior actions per World Bank project received by a recipient country i in period t, rounded to the closest integer. Marginal effects at the mean value of the variable are reported. Standard errors are clustered by recipient country. p-values are shown in parentheses. Significance levels: *** p < 0.01, ** p < 0.05, *p < 0.1.

1.8.2. Benchmarks

Next, *Model 6* reports the influence of China's aid on benchmarks (non-binding conditions) in 54 aid-recipient countries in Africa, for the period 2006 to 2013.[14] The dependent variable now measures the average number of benchmarks (*Avg. Benchmarks*) received by an African country in a year. Results are shown in Table 1.4. Starting with the coefficient on *Avg. Benchmarks* appear with a positive sign and turned out to be insignificant. It is in line with our hypothesis that China's aid should have no significant impact on the World Bank's benchmarks.

Model 7 disaggregates China's aid into ODA and OOF to check if any of them has a relatively noticeable impact on benchmarks. As can be seen from *Model 7* in Table 1.4, the individual impact of China's ODA and OOF does not have a statistically significant association with benchmarks. Therefore, we cannot reject the null hypothesis that China's aid should have no impact on the World Bank benchmarks. One plausible explanation of this consistently insignificant finding is the fact that benchmarks do not determine the disbursements of the World Bank aid as they are not counted as conditions in the legal documents. They are only the implementation progress markers which are used as a management tool and reference framework to indicate the overall performance of recipient countries in a policy program. As recipient countries are not bound by the number of benchmarks included in an aid agreement, the World Bank cannot use it as a tool to attract recipient countries.

[14] The data on benchmarks is only available from 2005 to 2012. Comparable number of years are also tested for prior actions and the results remain same. Results are available upon request.

Further, we extend the analysis to include all the recipient countries in the sample (*Model 8*), increasing the number of observations from 62 to 207. The coefficient on *Avg. Benchmarks*, although positive, is barely significant at the ten percent level. As a next step, we disaggregate China's aid into ODA and OOF *(Model 9).* The coefficient on China's OOF turned out insignificant and that of ODA is only significant at the ten percent level. Overall, the results presented in Table 1.4 indicate that China's aid has no significant impact on the number of benchmarks attached with subsequent World Bank aid projects. However, the small positive coefficients on China's total aid and ODA suggest that the World Bank is attaching more reference frameworks with its aid projects in the form of benchmarks to countries receiving China's aid. This might be because the World Bank is potentially more cautious of tracking the progress and outcome of its aid project in the countries funded by China in order to assure that receiving China's aid is not diverting the recipients' away from the World Bank project goals.

Table 1.4: China's Aid and World Bank Benchmarks, Negative Binominal, 2006-2014

	Africa		World	
	Model 6	Model 7	Model 8	Model 9
China's Aid (log,t-1)	-0.0105		0.0062*	
	(0.3008)		(0.0947)	
China's ODA (log,t-1)		-0.0068		0.0100*
		(0.3725)		(0.0951)
China's OOF (log,t-1)		-0.0028		-0.0032
		(0.6389)		(0.4813)
Avg. Fields	0.0294	0.028	0.0018	0.0028
	(0.5788)	(0.7118)	(0.9211)	(0.8907)
World Bank's Aid (log)	0.002	0.0008	0.0128	0.0142
	(0.8929)	(0.9703)	(0.1566)	(0.1356)
GDP per Capita (log,t-1)	-0.1074	-0.1211	1.0350***	1.2578***
	(0.8008)	(0.8919)	(0.0001)	(0.0000)
GDP Growth (t-1)	0.0365***	0.0539***	0.0154	0.0176
	(0.0001)	(0.0005)	(0.1623)	(0.1580)
CPI Growth (t-1)	1.3313**	2.3137	-0.1533	-0.0122
	(0.0135)	(0.1130)	(0.8529)	(0.9895)
Gov. Expd. (% of GDP,t-1)	-0.0107	-0.0115	-0.0137	-0.0098
	(0.4051)	(0.5851)	(0.2767)	(0.5219)
Reserves (% of GDP,t-1)	-0.0211*	-0.0305*	0.0105*	0.0120*
	(0.0580)	(0.0925)	(0.0732)	(0.0761)
Investments (% of GDP,t-1)	0.0042	0.0069	0.0065	0.0075
	(0.4849)	(0.6149)	(0.4744)	(0.4916)
Ext. Debt (% of GDP,t-1)	-0.0024***	-0.0038***	.000017	-0.0001
	(0.0002)	(0.0005)	(0.9758)	(0.8987)
UN Voting Aff. US (t-1)	-0.8051	-1.8972	-1.8771*	-2.4402**
	(0.6009)	(0.4199)	(0.0577)	(0.0421)
Democracy (t-1)	-0.128	-0.2185	0.0505***	0.0586***
	(0.3634)	(0.2704)	(0.0000)	(0.0000)
N	62	62	207	207

Notes: The dependent variable measures the average number of benchmarks per World Bank project received by a recipient country *i* in period *t*, rounded to the closest integer. Marginal effects at the mean value of the variable are reported. Standard errors are clustered by recipient country. p-values are shown in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

1.8.3. Other Explanatory Variables

Turning to the results of the coefficient on *Avg.Fields*, the marginal effects for the average number of fields that a project covers is positive and significant across all estimated models on prior actions. Consistent with our expectations, the World Bank projects that seek to influence economic activities in several fields are likely to be the ones that come with the most prior actions attached. Specifically, a one percent increase in the average number of fields covered per project resulted in more prior actions ranging between 0.06-0.7. In contrast, average fields did not seem to be an important determinant of benchmarks. The next variable, World Bank's Aid, is found to be positive and significant only on average number of prior actions in Africa. Overall, the results suggest that broader project scope rather than its magnitude is the better determinant of World Bank cumulative conditions and prior actions.

Moving on to the control variables in Matrix X, they appear to be less relevant as they were only occasionally significant at conventional levels. As concerns the surprising positive effect of GDP per capita, GDP growth and democracy on prior actions and benchmarks in some instances, it might suggest that these countries are more committed to the implementation of reforms, received in the form of conditionality, conducive to economic growth and development and the World Bank is operating counter-cyclically in these countries.

1.9. Robustness Check

This study performed some robustness checks to validate key results on the impact of China's aid on the World Bank's prior actions in Africa. We estimated several models with different lag effects, sample size and exclusion of outliers to ensure that the empirical estimates are not fragile to model specifications (see Table 1.5).

First, we test the robustness of the results in *Model 10* by taking the second lag in order to ensure the results are not derived by the lag structure. We found that the negative impact of China's aid on World Bank prior actions is robust to the choice of lag structure (see *Model 10*).

Second, we alternatively measured the size of the World Bank project from the World Bank's Projects and Operations database and then matched the project ids with DPAD's data on prior actions (*Model 11*). It allowed us to match the size of a project in dollar terms with the number of prior actions attached to it. This is in contrast with our variable *World Bank's Aid* in which we followed Hernandez by including the value of all World Bank projects that a recipient had received in a year regardless of its association with conditionality. This alternative measure of the World Bank project size is still positive and significant, and it did not disturb the result of our key explanatory variable (*China's Aid*).

Third, *Model 12* investigates if the results are derived by the extreme values of our dependent variable by deleting the average number of prior actions exceeding 20. The choice of this cut-off is rather arbitrary; however, the results stay the same if instead delete more than 10 conditions.[15] Removing the outliers do not seem to alter the main findings of our analysis.

Fourth, *Model 13* and *Model 14* check if the negative association between China's aid and World Bank prior actions only appears in high and low China's aid receiving countries (above/below the median China's aid) respectively. We further sub-divide our sample of African countries into low-income countries (*Model 15*) and middle-income countries (*Model 16*) using the World Bank's, Income Classification.[16] The idea is to check if the negative relationship between China's aid and World Bank prior actions only exist in African countries belonging to a particular income category.

The last two sets of results imply that among African countries, the negative relationship particularly hold for low-income countries as well as countries receiving above average China's aid in a year. Low-income countries are more likely to have access to funding from various donors based on their economic and development needs. Moreover, the World Bank might face greater competition to finance aid

[15] We also use Cook's distance method to detect outliers. Cooks distance is a measure that combines information of leverage (how far an explanatory variable deviate from its mean) and residual (difference between observed and predicted value). Results from excluding these outliers are provided in Appendix A.2.

[16] The World Bank defines low income countries as those with a GNI per capita of $995 or less; lower middle-income countries are those with a GNI per capita between $996 and $3,895; upper middle-income countries are those with a GNI per capita between $3,896 and $12,055. Our dataset has merged lower and upper-middle income countries into one for an easier interpretation.

projects in low-income countries due to China's particular interest in these countries. Similarly, within the countries receiving above average China's aid, the World Bank seems to reduce relatively more conditions on subsequent aid projects to provide aid on a more competitive basis.

Table 1.5: Robustness Checks

	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	*Model 16*
China's Aid (log, t-1)	-0.0800**	-0.0569**	-0.0581**	-0.9800***	-0.0727	-0.0861**	-0.0562
	(0.0122)	(0.0243)	(0.0296)	(0.0031)	(0.1300)	(0.0347)	(0.1846)
Avg. Fields	0.5972**	0.5532**	0.4208**	-0.4494*	0.6910***	0.7183***	0.0718
	(0.0178)	(0.0184)	(0.0377)	(0.0572)	(0.0062)	(0.0000)	(0.8527)
World Bank's Aid (log)	0.1601***		0.1457***	0.1457***	0.1457***	0.1457***	0.0977**
	(0.0009)		(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0433)
GDP per Capita (log, t-1)	1.2411	2.3836	1.2979	3.8308	-5.0670*	0.9202	-0.903
	(0.5440)	(0.3679)	(0.5725)	(0.3427)	(0.0903)	(0.7591)	(0.6335)
GDP Growth (t-1)	-0.1073	0.1938	0.0382	-0.3059	0.0574	0.0526	0.0103
	(0.4780)	(0.2781)	(0.6457)	(0.2421)	(0.5360)	(0.6304)	(0.9551)
CPI Growth (t-1)	1.5347	1.1844	4.1244	1.0208	4.1118	2.2373	-7.4766
	(0.6941)	(0.8484)	(0.2154)	(0.9287)	(0.1102)	(0.3470)	(0.6298)
Gov. Expd. (% of GDP, t-1)	-0.2188**	-0.1269	-0.0024	0.8627***	-0.2813**	-0.1579	0.6307***
	(0.0442)	(0.3986)	(0.9856)	(0.0000)	(0.0112)	(0.1946)	(0.0058)
Reserves (% of GDP, t-1)	-0.0316	0.1796	0.0937	-0.062	0.0842	-0.0021	0.055
	(0.7349)	(0.8724)	(0.1320)	(0.6524)	(0.2177)	(0.9839)	(0.4285)
Investments (% of GDP, t-1)	0.0915	0.0577	-0.004	0.2342***	0.1177**	-0.1718	-0.1718
	(0.2676)	(0.2503)	(0.9540)	(0.0028)	(0.0337)	(0.1544)	(0.1544)
Ext. Debt (% of GDP, t-1)	-0.0075	-0.0024	-0.0026	-0.0107*	-0.0042	-0.0332	-0.0332
	(0.4954)	(0.5177)	(0.9598)	(0.0838)	(0.4518)	(0.3831)	(0.3831)
UN Voting Aff. US (t-1)	1.235	-5.3347	5.1869	-20.1717	3.8375	-72.8552***	-72.8552***
	(0.8602)	(0.5041)	(0.7472)	(0.1041)	(0.5576)	(0.0024)	(0.0024)
Democracy (t-1)	0.2211	-0.0049	4.0882***	-0.3268*	0.6083*	-0.4646**	-0.4646**
	(0.2510)	(0.9795)	(0.0032)	(0.0804)	(0.0659)	(0.0160)	(0.0160)
Cum Proj. Size		0.7880*					
		(0.4097)					
N	121	154	57	101	93	65	65

Notes: The dependent variable measures the average number of prior actions per World Bank project received by a recipient country *i* in period *t*. Model 13 and 14 include countries receiving above-average and below-average China's aid respectively. Model 15 and 16 include low-income countries and middle-income countries respectively, p-values are shown in parentheses. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

1.10. Conclusion

This chapter revolves around the debates on the rise of China as a new donor in the international aid market and how the World Bank is adapting its aid-giving practices in response to the increase in the supply of China's aid. Specifically, we have investigated whether the number of conditions associated with the World Bank aid projects is influenced by the additional supply of China's aid.

We attempted to replicate an influential study by Hernandez (2017) on the impact of China's aid on the World Bank's cumulative conditions to African countries, i.e., the World Bank will revise its conditionality downwards if the presence of new donors (specifically, China) creates an increase in the supply of development resources in the recipient country and upwards if it does not. While an accurate replication has proved impossible, the replication attempt has motivated us to extend Hernandez's analysis to disaggregated forms of the World Bank conditionality and China's aid beyond Africa in order to evaluate the generalisability of his findings.

As a first step, we disaggregated the World Bank conditionality into prior actions (binding conditions) and benchmarks (non-binding conditions). Prior actions are legal conditions which countries have to follow in order to receive an aid project whereas benchmarks are only used as reference frameworks. As benchmarks are not determinative of aid disbursements, recipient countries potentially only bargain over the number of prior actions included in an aid project. We find robust evidence that

the World Bank delivers aid with significantly fewer prior actions to African countries in receipt of China's aid.

As a next step, we disaggregated China's aid into ODA and OOF. Hernandez has defined China's aid strictly in terms of ODA, although a large proportion of China's aid consists of OOF. Our results indicate that the competition between the World Bank's and China's aid is more relevant for the relatively concessional lending, i.e., ODA. Whereas, no significant impact of China's less concessional forms of aid, i.e., OOF was found on prior actions. This is in line with our expectations that the larger the grant element of China's aid projects, the more the recipient countries will value the transfer and thus the lesser number of prior actions have to be offered by the World Bank in order to attract the recipients.

We then extended Hernandez's analysis to 132 aid-recipient countries across the world in order to evaluate the generalisability of his findings. We do not find a statistically significant association between China's aid and the World Bank's prior actions in recipient countries across the world. It suggests that Hernandez's findings are limited to Africa, which is important given the rising percentage of China's aid received by the region. China's particular interest in Africa might allow the countries in this region to have more financial options, inducing the World Bank to redesign its programs in Africa. Whereas, China's aid has no influence on the World Bank prior actions in other regions. Perhaps, China as well as other donors are less interested in providing aid to other regions and consequently, these countries are turning to the World Bank as a lender of last resort for fulfilling their development and commercial aid-based needs.

With regards to benchmarks, consistent with the expectations, the study finds that China's aid does not have a statistically significant influence on benchmarks. An explanation of this result is the fact that recipient countries do not need to bargain over the number of benchmarks, consequently the World Bank can't use them as a competitive tool to attract recipients.

Overall, our key results (as well as Hernandez's findings) should be interpreted with caution as they are not generalisable to all the countries receiving aid from China. One caveat to our findings is that the framework is not suited to account for the spill over effects of China's aid. We aim to address this issue in future work by investigating how an increase in the supply of China's aid in a country could influence the World Bank's ability to use conditions in other countries. Another promising avenue for future research is to evaluate if the World Bank select aid projects in countries where China is already present and vice versa.

Appendix A: Replication of Hernandez's Study

The study attempted to replicate Hernandez's analysis to be more certain about the findings upon which our hypothesis has been built, to learn the strengths and shortcomings of the pioneer work on the impact of China's aid on the World Bank conditionality and to check the robustness of his results. The replicated and original results are presented in Appendix A.1. In the replication process, we tried to follow Hernandez as close as possible, i.e., same country coverage (54 African countries), sample period (2000 to 2013), data sources and choice of variables. However, exact replication of his results was infeasible given the untraceable nature of data updates and incomplete information on the versions of datasets used in his study. Specifically, Hernandez (2017) used 6 different databases but did not provide full information on the versions of the datasets being used. All 6 databases are updated annually with improved and newer data. For instance, the data on the dependent variable, i.e., number of World Bank conditions taken from Development Policy Action Database has been updated, with no information provided on the updates and changes they make in the new release. Moreover, aid projects classified as inactive and cancelled have been removed from the most recent release on the global coverage of China's aid.

Another challenge faced with replication was to understand the sources of ambiguity in the summary statistics. Firstly, the number of observations reported in the summary statistics do not reflect the reported panel since they are exceeding 1836 observations, i.e., the product of number of countries and stated estimation period. Moreover, given that 30% of the official projects in the database are missing a financial amount, it was

very important to understand the author's approach towards the treatment of missing values. However, Hernandez provided no discussion on missing values. In the replication results, we treated the missing values as 'zeros' for those recipient country-year pairs on which the data has no information on China's aid. In contrast, the other non-quantifiable missing flows reported in AidData have been left as missing. Table A.1. presents the replicated and original results from Hernandez's baseline model (Model 2 in Table 2a of Hernandez's study). Following Hernandez, we restrict our analysis to China's ODA and evaluated its impact on average number of World Bank cumulative conditions which include both prior actions and benchmarks.

Starting from the first variable in the column 'Replicated Results', the marginal effects of the average number of fields covered by an aid project remains positive and highly significant in the both the original and replicated results. However, there is a slight difference between the size of the coefficients, i.e., it increased from 1.3 to 1.5. This difference has potentially arisen because of the data updates. The consistent positive relationship observed in the replicated results assert that a World Bank project seeking to impact economic activities in various sectors contains significantly more conditions. The second variable measuring the impact of the size of the World Bank project also turned out to be positive and significant which is in contrast with Hernandez's result of a negatively insignificant coefficient. This result contradicts Hernandez's finding that the size of a World Bank aid project is not a good determinant of conditionality. Among the control variables, the only variables which match in terms of both coefficient's sign and significance are external debt and UN voting affiliation with the US External debt turned out to be significant at 1% and 10% level respectively in the

original and replicated results which signifies that the higher the debt burden the higher will be the scope of World Bank conditionality. The negative and significant coefficient on UN voting affiliation with the US in both the original and replicated results signify the influence of the political interest of the US in the negotiation process over conditionality. Other control variables seem less relevant in the replicated results. Overall, from the replicated results, we found a mixed evidence of the impact of economic situation of a recipient country on the World Bank conditionality.

Turning to the investigation of the impact of China's ODA on the World Bank conditionality, similar to Hernandez's results, the marginal effects of China's aid enter the equation with a negative sign. In particular, a one percent increase in China's ODA will result in 0.09 fewer World Bank conditions. However, this negative effect was not found to be significant in the replicated results. The difference in the magnitude and significance of the estimated effect could potentially arise due to the factors discussed above, i.e., treatment of missing aid flows from China, and the use of updated data sets. As can be seen from the table, the number of observations also differ in the replicated and original results. Potentially, the main reason behind the higher number of observations in the replicated results is the updated data on China's aid as well as the World Bank conditions. Although the replication attempt could not exactly produce the original results due to the constraints mentioned above, yet it did motivate us to extend Hernandez's study beyond Africa in order to evaluate the generalisability of his findings.

A.1: China's ODA and World Bank Cumulative Conditions, Negative Binominal, 2000-2013

	Original Results	Replicated Results
China's Aid (log,t-1)	-0.159**	-0.0914
	(0.0233)	(0.4198)
Avg. Fields	1.331**	1.5561**
	(0.0140)	(0.0112)
World Bank's Aid (log)	-0.32	0.3363**
	(0.4015)	(0.0341)
GDP per Capita (log,t-1)	-14.79**	1.8593
	(0.0365)	(0.0675)
GDP Growth (t-1)	-0.0925	0.1886
	(0.6818)	(0.4879)
CPI Growth (t-1)	-33.78***	7.3011
	(0.0007)	(0.2199)
Gov. Expd. (% of GDP,t-1)	-0.181	-0.1164
	(0.3692)	(0.7214)
Int Reserves (log, t-1)	-1.507	-0.3757
	(0.2310)	(0.8859)
Investments (% of GDP,t-1)	0.0006	0.0006
	(0.0471)	(0.9977)
Ext. Debt (% of GDP,t-1)	0.0192**	0.0360*
	(0.0233)	(0.0960)
UN Voting Aff. US (t-1)	-28.90***	-51.5523*
	(0.0020)	(0.0681)
Democracy (t-1)	1.522**	-0.3977
	(0.0112)	(0.4837)
N	126	134

Notes: The dependent variable measures the average number of cumulative conditions per World Bank project received by 54 African recipient countries from 2000-2013. Marginal effects at the mean value of the variable are reported. Country and year fixed effects included. Standard errors are clustered by recipient country. p-values are shown in parentheses. Significance levels: ***p < 0.01, **p < 0.05, *p < 0.1.

A.2: China's ODA and World Bank Cumulative Conditions, Negative Binominal, 2000-2013

	Placebo Test	Cook's Distance	Deleting Russia, as outliers
Avg. Prior Actions	-0.0293		
	(0.1412)		
China's Aid (log,t-1)		-0.0562**	
		(0.0346)	
Avg. Fields	-0.0119	0.8105**	
	(0.8090)	(0.0257)	
World Bank's Aid (log)	0.0162*	0.2362***	
	(0.0544)	(0.0001)	
GDP per Capita (log,t-1)	-0.1422	1.2979	
	(0.7476)	(0.5725)	
GDP Growth (t-1)	0.0007	0.4738	
	(0.9765)	(0.3557)	
CPI Growth (t-1)	-0.1857	4.1244	
	(0.9024)	(0.2154)	
Gov. Expd. (% of GDP,t-1)	-0.0509**	-0.0024	
	(0.0362)	(0.9856)	
Int Reserves (log, t-1)	-0.0099	0.0937	
	(0.6013)	(0.535)	
Investments (% of GDP,t-1)	0.018	-0.006	
	(0.3332)	(0.687)	
Ext. Debt (% of GDP,t-1)	-0.0058	-0.0052	
	(0.1653)	(0.9598)	
UN Voting Aff. US (t-1)	0.0516	4.143	
	(0.9806)	(0.7472)	
Democracy (t-1)	0.0805	3.976***	
	(0.3285)	(0.0002)	
N	126	116	

Notes: The dependent variable in column 1 measures China's aid received by a country in a year. Whereas, the dependent variable in all other columns measure the average number of cumulative conditions per World Bank project received by 54 African recipient countries from 2000-2013. Marginal effects at the mean value of the variable are reported. Country and year fixed effects included. Standard errors are clustered by recipient country. p-values are shown in parentheses. Significance levels: ***p < 0.01, **p < 0.05, *p < 0.1.

Chapter 2: A Study on the Role of Human Rights in the Aid Allocations of China and the United States.

2.1. Introduction

Among scholars interested in the link between human rights considerations and aid allocation, a long-established debate continues over the extent to which donors take into account recipient countries' respect for human rights in their aid allocation decisions (Alesina and Dollar, 2000; Neumayer, 2003; Nielsen, 2013). Some argue that donors prioritise economic considerations or political interest over human rights which makes it unlikely that they will systematically avoid recipient countries with poor human rights records (Alesina and Dollar, 2000; Neumayer, 2003). Others find that donors use reduction/curtailment of aid as a sanction to punish countries Lebovic and Voeten, 2009; Nielsen, 2013). While much work has been done on the human rights-aid nexus in the context of traditional donors, as of yet only limited empirical investigation has been conducted for the aid allocations made by the largest new donor i.e., China.

The increase in China's aid in the past two decades has been watched with much suspicion by policymakers and academics in the field of global development. Some concerns have been raised regarding China's engagement with the recipient countries. For example, criticisms have been made of tying aid to natural resource extraction and disregarding governance in aid allocation (Tull, 2006; Woods, 2008). One prominent issue that continues to resurface in media reports and policy debate is that China provides aid to countries with poor human-rights records (The Economist, 2008; Naim, 2007; Samy, 2010). Western media and human rights organisations have warned about

China's provision of aid to countries with poor human rights records (Hanson accessed 2010). That China's "non-interference policy" ignores human rights in Africa. China's engagement with countries like Sudan, Angola and Zimbabwe has fuelled such criticisms (Tull, 2006; Taylor, 2009). Much of this criticism is drawn from informed assumptions and qualitative case-studies on an individual country basis or examples from some specific aid agreements. The findings are therefore hard to generalise. Against such a background, the present study aims to empirically investigate the legitimacy of mounting criticism on China's disregard of recipient countries' abuses of the human rights of their citizens when allocating aid. Our primary goal is to answer: Do recipient countries with a poor human rights record receive a significant share in China's aid? Most importantly, we will adopt a comparative approach to evaluate whether the influence of human rights in aid allocation decisions made by China (accused of providing aid to countries with poor human rights record) differs from that of the US (where respect for human rights in aid allocation is mandated by law). We chose to focus on US because 1) US Foreign Assistance Act prohibits aid to any country which abuses the human rights of their citizens (Foreign Assistance Act of 1975, Section 116); and 2) the US is the largest traditional donor, contributing more than 34% of total aid spending to recipient countries worldwide by Development Assistance Committee (DAC) donors in 2017 (OECD, 2017).

This study moves beyond earlier research on China's aid allocation, which has so far been limited to Africa (Dreher et al., 2018). In what follows, we analyse 125 recipient developing countries across the world and offer a focused analysis of recipient countries' respect for human rights in China's aid allocation decisions within Africa

as well as rest of the World. This work has been made feasible by the release of the most recent dataset on China's aid (Global China Data, version 1.1) by AidData in October 2017.

The few empirical studies on China's aid allocation have evaluated the role of human rights only in passing since their key focus was on other economic and political determinants of aid flows (see for example, Dreher, 2009). Consideration of recipients' merit has been limited to corruption and democracy. In contrast, this study squarely places human rights considerations in China's aid allocation as the key focus of inquiry. For this purpose, we have selected two widely cited standard indicators measuring the respect for human rights in a country, namely: Political Terror Scale, hereafter PTS; and Civil liberties, hereafter, CL. After carefully analysing the correlation between these two indicators in Section 3, we are confident that our indicators are capturing the human rights violations in a country. Note that the human rights indicators, however, may be proxying for other variables measuring the overall level of governance in a country. Additionally, the chapter makes a new contribution to the literature by comparing the human rights-foreign aid linkages between China and US—i.e., the largest new donor vs largest traditional donor.

One limitation of this chapter is that we lack detailed data on the channels through which China is providing aid to recipient countries. For instance, it might be the case poorly governed countries are mainly receiving China's aid through non-state actors in order to avoid human rights abusing governments yet addressing the economic

needs of the country. Some examples of non-state actors are private contractors, NGOs, public-private partnerships.

This is not to ignore the limitations of the present study. The same could apply to the US aid allocations. Unless China becomes more transparent in its aid allocation criteria and release official data on its aid allocation, it is hard to understand its motivations behind aid allocation fully. In other words, since there are still large gaps in knowledge that need to be filled, it would be premature to make too many generalisations.

The next section explains donors' political motivations for providing aid. This is followed by a discussion on the relevance of recipients' human rights in US (Section 3) and China's aid (Section 4) allocation, respectively. Section 5 presents an extensive overview of our human rights measures. Section 6 starts with presenting some stylised facts on China's and US aid allocation across world. As a second step, we present a bivariate analysis on the role of human rights in aid allocation. Section 7 explains the methodology used in the empirical analysis. Empirical results are presented in Section 8 and Section 9 concludes.

2.2 Donors' Motivations Behind Aid Allocation

In line with the prior literature, this study relies on rational choice theory *to* explain donors' motivations for providing aid and the extent to which human rights considerations impact aid allocation (Guillaumont, 2011; In'airat, M., 2014). The *r*ational choice theory has long been a dominant paradigm in economics to understand and often formally model human behaviour. According to this theory, self-interested

individuals make logical and prudent choices influenced by their preferences. These choices provide them with maximum expected utility, which is therefore known as the rational choice (Durlauf and Blume, 2008).

In the context of aid allocation, the literature suggests that donors have a clear rationale behind aid provision. The factors relevant to aid allocation have been classified into recipients' need, donors' self-interest and recipients' merit. Although the debate is often polarised into one of these existing set of factors, research suggests that all of them are potentially valid. These rationales are discussed in detail as follows:

2.2.1 Recipients' Needs

The most obvious rationale for a foreign aid programme is, of course, the promotion of economic growth and development in the recipient countries. The rationale is grounded in the argument that donors are expected to make ethical decisions, granting aid to the neediest countries (Radelet, 2006). It originates from a feeling of individual responsibility for people living in poverty or countries facing humanitarian crises (i.e., natural or human-made disasters) irrespective of national boundaries. Therefore, according to the recipient need rationale, the amount of aid allocated to a recipient country should be in proportion to its need. Since recipients' economic need is a rather subjective concept, the literature indicates no obvious indicators or natural cut-off points. Primarily, authors have used income per capita as a proxy for recipients' economic needs (for example, Neumayer, 2003a). The income per capita is a convenient measure for regression analysis due to its relatively good coverage across a large number of recipient countries and over time. However, Nielsen (2010) (among

others) have criticised the indicator by arguing that countries with similar levels of per capita income might have very different needs in health, education, infrastructure or humanitarian emergencies. Henceforth, studies have begun to incorporate more comprehensive indicators of poverty and human development, i.e., the human development index, Physical Quality of Life Index, literacy rate, mortality rate, malnutrition, life expectancy, headcount index, and the people affected by disaster (see, for example, Collier and Dollar, 2002; Bigsten et al., 2011; Neumayer, 2003b; Tarp et al., 1999). Some of these studies (incorporating broader need indicators) found that in contrast to the rationale, recipients' needs are not an important consideration of donors.

2.2.2 Donor's Self-interest

The second rationale is donors' self-interest which focuses on the political and commercial motives of donors. It assumes that donors use aid as an instrument of foreign policy in pursuit of their own interest. Therefore, their aid allocation decisions might be self-strategic in that they expect to receive some favour in return for providing aid. The 'favour' expected could be support in international politics, permission to build foreign bases in the recipient country, strengthening alliances, or keeping allied regimes in power (Dreher and Vreeland, 2009; Todaro and Smith, 2009; Hoeffler and Outram, 2011; Dreher et al., 2015). From this point of view, aid may be used by the donors as a tool to further their commercial interests or to reward recipient countries pursuing favourable policies to the donor. Some of the commonly used indicators of political and commercial interests are correlation in donor/recipient UNGA voting patterns, military expenditures, size of armed forces, colonial ties and

trade intensity between recipients and donors (Alesina and Dollar, 2000; Neumayer, 2003a; Younas, 2008). Many empirical studies have incorporated these kinds of indicators to represent donor self-interest and found that donor's interest is a significant determinant of aid allocation (for example, Alesina and Dollar, 2000; Berthe´lmy & Tichit, 2002; 2009; Feeny & McGillivray, 2004; McGillvray, 2003; Fuchs and Vadlamannati, 2013).

2.2.3. Recipients' Merit

While the aid allocation literature shows that recipients' need as well as donors' self-interest influences the allocation of aid, in the 1990s the rationale of recipients' merit has attracted increased attention. Recipient merit is best understood as to how the recipients perform with respect to improving their economic and political environment, i.e., institutional quality, democratic governance, and the respect for human rights.

The recipient merit rationale is grounded in the aid-effectiveness argument, where donors prefer to allocate aid to countries that can utilize it efficiently. According to this rationale, aid is only expected to reduce poverty, foster growth, and improve social conditions if it is given to countries with a serious commitment to implementation and good policy environment (Boone, 1996; Burnside and Dollar, 1998, 2000, 2004). A number of studies have found evidence that the effectiveness of aid is dependent on the quality of governance, political regime and economic institutions in the recipient countries. For instance, Boone (1996) found that aid is more effective in liberal political regimes and democracies. Similarly, the World Bank report "Assessing Aid"

published in 1998 shows that the effectiveness of foreign aid is conditional on good policy environment and effective public institutions.[17] Later, Svensson (1999) found that aid effectiveness is conditional on the respect for political rights and civil liberties in recipient countries. Although some of these findings have been debated (Hansen and Tarp 2001; Easterly et al., 2004), the conclusion emerges that if donors want to maximize aid effectiveness in terms of growth or poverty reduction, they should allocate aid as per the merit of the recipients.

2.2.3.1. Human Rights as a Criterion of Recipients' Merit

An important component of recipients' merit is considered to be the respect for human rights. The Universal Declaration of Human Rights suggests a corresponding duty of all governments not to support other governments engaged in serious violations of internationally recognised human rights (United Nations General Assembly, 1948). Since aid flows are the primary source of external finance in many developing countries, connecting aid allocations to human rights conditions has been perceived to be a powerful tool to improve the protection of human rights in recipient countries (Carey, 2007). President Jimmy Carter's Presidential Directive in 1978 established for the first time that "it shall be a major objective of US foreign policy to promote the observance of human rights throughout the world." (Presidential Directive, NSC-30). Other developed countries also recognised the promotion of human rights and democracy as crucial foreign policy objectives in the 1980s. Japan also issued an

[17] International Bank for Reconstruction and Development, 1998. Assessing Aid: What works, what doesn't, and why. Oxford University Press.

official government document in 1992 which linked foreign aid to human rights in recipient countries (Yokota and Aoi 2000, p. 135). At least in their policy rhetoric, developed countries frequently tie foreign aid to the promotion of human rights in recipient countries.

2.3. Role of Human Rights in US Aid Allocation

In the 1970s, the US was perhaps the leading donor which tied its aid allocation to the observance of human rights. This commitment was backed up in legislation passed in 1974 which mandated violation of human rights would prohibit aid stating that: "No assistance may be provided under this part to the government of any country which engages in a consistent pattern of gross violations of internationally recognized human rights . . . unless the aid is intended to help needy people" (Foreign Assistance Act, Section 116). It was further explained that the violation of human rights comprises "torture, cruel or inhumane treatment or punishment, prolonged detention without charges, causing the disappearance of persons by the abduction, or other flagrant denial of the right to life, liberty, and the security of person" (Foreign Assistance Act, Section 116). Thus, foreign aid ought instead to be directed to countries that protect/observe human rights. As such, the clear intent of US Congress was that US aid policy should reflect ethical and moral principles and potential recipient countries are required to abide by international human rights standards. However, the "needy people" provision in the Foreign Assistance Act seems to allow decision-makers a degree of leeway when allocating foreign aid. It allows for lawful exemption from the

human rights requirement in some cases, for example, in the aftermath of humanitarian emergencies or when aid can otherwise be explicitly directed to 'needy people'.

Since the implementation of the law, considerable empirical research has been conducted on the link between US aid allocation and human rights considerations. Most of the early empirical studies illustrated a simple correlation between foreign aid and human rights and found that the efforts to link aid to the observance of human rights has been ineffective (Carleton and Stohl, 1985; Stohl, Carleton and Johnson, 1984). A few exceptions are Cingranelli and Pasquarello (1985) and Schoultz (1981), who found more positive effects.

Other studies raised extensive theoretical and methodological discussions. For example, Cingranelli and Pasquarello (1985) were the first researchers to investigate the role of human rights in the US aid allocation with a fully specified multivariate model, employing a two-stage analytical framework. Poe (1992) adopted this approach and argued that aid allocation is a two-stage process, i.e., a) selection stage, when the decision is whether or not to provide aid to a country and b) allocation stage, when how much aid to provide to the selected countries is decided. They found that human rights practices were an important determinant of selection stage for Latin American countries under the Carter administration. Similarly, Apodaca & Stohl (1999) compared the Carter, Reagan, and Bush administrations' aid allocation decisions to 140 countries from 1976 to 1995. The authors found that "allocations under Reagan, Bush, and Clinton were not quantitively different from those under Carter, the reference category".

The most commonly used indicator of the recipient country's observance of human rights used in US aid allocation studies is Political Terror Score (see Section 2.5.1. for details). Poe (1992) and Apodaca & Stohl (1999), among others, have used this indicator to measure human rights. Later, Poe and Sirirangsi (1994), incorporated Freedom House's scale of Civil Liberties in addition to Political Terror Score. They found that countries with a poor human rights record are at times allocated significantly more economic aid than others because of their political and strategic attributes. Abrams and Lewis (1993) used an uncommon human rights measure compiled by Charles Humana (1986) which is derived from a country-level survey with forty questions relating to government adherence to the protection of specific human rights (for details, see Bernt, 1991). Using this indicator, Abrams and Lewis (1993) found that observance of human rights appears to play a positive and statistically significant role in decisions on aid allocations to 117 countries in 1989.

The findings of some of the above studies have been criticised for the use of aid per capita as the dependent variable. This criticism follows Uslaner (1976) who show that the use of this dependent variable is methodologically incorrect as the per capita transformation could result in enormously high or low correlations and induce unjustified statistical relationships between variables. Cingranelli and Pasquarello (1985) also emphasised that foreign aid decision-makers conceptualise aid in terms of dollar amounts allocated annually rather than referring to per capita terms. However, Abrams and Lewis (1993) and Apodaca & Stohl (1999) have used aid per capita as the

dependent variable regardless of the methodological and theoretical limitations noted by Uslaner (1976) and Cingranelli and Pasquarello (1985).

In more recent years, a few studies have revisited the US aid-human rights nexus. For example, Lai (2003) compared the impact of human rights considerations and security interests in the Cold War (1982-1990) and post-Cold War (1991-1996) eras. He used the Heckman sample selection model and the contribution of his study lies in creating a variable measuring the evolving nature of security threats to the US by identifying rogue states. Lai (2003) found that human rights—as measured by combining Freedom House Political Rights and Civil Liberties index did not affect the initial yes/no selection decision to allocate aid in both Cold War and post-Cold War era. However, the human rights measures attract moderate-to-high statistical significance in various models of second-stage aid allocation decisions, and estimated coefficients suggest that countries with poor human rights record are likely to receive less aid than others. Later, Demirel-Pegg and Moskowitz in 2009 extended the analysis to more recent years from 1977 to 2004 and provided support to Lai's results.

Overall, the majority of empirical work focusing on the time period of the Cold war until the early 2000s has yielded mixed results on the extent to which the US is genuinely committed to its foreign aid policy rewarding recipients' observance of human rights. However, more recent empirical studies have suggested that US decision-makers pay more attention to recipients' observance of human rights when making aid allocations. Our study extends this debate by assessing whether there is any change to the conclusions when examining the most recent US data.

2.4. Role of Human Rights in China's Aid Allocation

The literature on China's aid allocation can be divided into two strands. The first is the early body of qualitative literature which is the origin of the prevailing beliefs and sentiments about China's aid today. This strand of literature criticises China for disregarding merit as a criterion in aid allocation. More specifically, it criticises the Chinese government for following selfish commercial and political motives in aid allocations and for its support to undemocratic, corrupt and human rights abusing regimes (Tull, 2006; Mohan and Power, 2008; Vines et al., 2009). The below quotes by Osondu-Oti (2016) and Kampf (2007) sheds some light on the reputation of China's aid.

"*...Of important note was China's support for the Sudanese government even in the face of human rights abuses; its unconditional aid to Angola, that has helped the government to shun accountability and transparency; its support for inhuman practices meted to the citizens of Zimbabwe by the government, among others"*

(Osondu-Oti, 2016, pp.49)

"For those states with poor human rights policies, China is easier to deal with than the United States and Europe" (Kampf, 2007, pp.45)

Perhaps, the best-known criticism on China's aid was put forward in 2007 by Moisés Naím (former editor in chief of the journal Foreign Policy). He labelled China as a "rouge donor". In his widely cited article, he claimed that China provides substantial aid to countries with records of significant human rights abuse in return for access to raw materials. He further argued that China's aid is unrelated to the needs of developing countries but is rather motivated by China's own national interest. He cited

examples of African countries receiving substantial aid from China while the same countries are being condemned by traditional donors.

China defends its approach stating it is based on a 'non-interference policy' i.e., willingness to provide aid "without Western lectures about governance and human rights" (Economist, 2010, para. 6). China's foreign aid policies stipulate that "there is no interference in the internal affairs of the recipient countries. They fully respect the right to independently choose their own paths and models of development" (State Council, 2014). The non-interference approach has been criticised in the literature under the assumption that it has enabled China to maintain friendly relations with human rights abusing countries.

Angola is cited as a prominent example where aid from China provided an opportunity to escape wider international pressure to strengthen its accountability. According to a report from Human Rights Watch[18], between 1997 and 2002, more than $4 billion worth of oil revenue has vanished from Angola's reserves. In 2004 and 2005, the IMF and other international donors pressurised the Angolan government to strengthen the transparency of its oil sector. However, the timely offer of a concessional loan of $2 billion from China allowed Angola to avoid accepting the good governance conditions tied to the loans from traditional donors (Human Rights Watch, 2004).

Another example often cited by scholars is China's provision of aid to Sudan at the time when government-armed militias launched a genocide against non-Arab civilians

[18] Human Rights Watch, Some Transparency, No Accountability: The Use of Oil Revenue in Angola and Its Impact on Human Rights, January 2004, pp. 1.

in 2003 (Kampf, 2007, p.45). Despite the severity of the conflict, China rendered the sanctions imposed by other traditional donors irrelevant by providing aid to Sudan (Osondu-Oti, 2016, p. 63). Angola and Sudan are not the only countries where China's aid appears to disregard human rights considerations. China has also provided aid to Robert Mugabe's autocratic government in Zimbabwe, which is to blame for hyperinflation and the slum-demolition campaign in 2005. When the US and EU imposed sanctions on Zimbabwe in 2000, China invested in over 100 aid projects.[19]

Most of these findings are drawn from qualitative case-studies on an individual country basis or are examples from some specific aid agreements. The findings are, therefore, hard to generalise. Dreher and Fuchs (2016), Amusa et al., (2016) and Dreher et al., (2018) made the initial attempts to confront some of the claims about China's aid allocation practices via empirical analysis. This marked the beginning of the second strand of literature and was made possible due to the first public release of the most comprehensive data set on recording China's aid in 2013 by AidData.

This second strand of literature provides quantitative evidence that suggests that most of the critique of China's aid seems unjustified. Dreher and Fuchs (2016) used the best data available at the time from a variety of data sources over the five chronological phases[20] of China's aid program over the period 1956 to 2006 and covering 132 recipient countries. Later, Amusa et al., (2016) and Dreher et al., (2018) used the

[19] Simon Roughneen, "Influence Anxiety: China's Role in Africa," International Relations and Security Network, May 15, 2006.

[20] First phase (1956–1969); second phase (1970–1978); third phase (1979–1989); fourth phase (1990–1995); fifth phase (1996–2006).

AidData database to analyse China's aid to 30 African countries over the period 1980-2012 and to 50 African countries over the period 2000-2013, respectively.

The central objective of these three empirical studies was to examine the determinants of China's aid allocation. They commonly categorised the motivations for China's aid into recipient's merit and donor's self-interest. However, Dreher and Fuchs (2016) have mainly focused on donor's self-interest, while Dreher et al., (2018) analysed recipient's merit and donor's self-interest motivations separately for Official Development Assistance (ODA) and Other Official Flows (OOF)[21].

The three empirical studies incorporated different indicators of recipients' merit as determinants of China's aid allocation. For example, Dreher and Fuchs (2016) and Dreher et al., (2018) measured recipients' merit in terms of democracy. The authors expect this variable to be insignificant in the determination of China's aid flows based on its non-interference policy. Dreher et al., (2018) also included Control of Corruption (CC) index compiled by the World Bank in order to investigate whether or not China's aid decisions reflect laxer attitudes towards corruption. In contrast, Amusa et al., (2016) used the political rights and civil liberties indices constructed by Freedom house to investigate the extent to which quality of governance matters in aid allocation.

As far as empirical results are concerned, Amusa et al., (2016) find that both donor motives and recipient needs are important factors determining China's (and US's) aid

[21] ODA comprise of grants or loans undertaken by the official sector with the aim of promoting welfare and development and has a concessional grant element of 25% or more. OOF comprise of export financing and other commercial activities that promote the donor countries economic interests; or developmental loans that are not concessional enough to be considered as ODA.

allocation to Africa. Recipient country's governance is also found to be a significant attraction of China's aid allocation. This finding runs counter to the claims that China provides aid to poorly governed countries. On the other hand, Dreher et al., (2018) find that China's ODA is mainly directed according to recipient needs and by foreign policy considerations, whereas the allocation of OOF is better explained by the commercial interests of China. Although the emphasis of the study was on investigating the surge of natural resources in China's aid, they also find that China acts in consistency with its principle of non-inference as they find no evidence that ODA is determined by recipient's merit measured in terms of control of corruption and democracy.

The above findings provide some clarity on the -rogue donor- image of China; however, the criticisms related to China's provision of aid to countries with poor human rights records is still unclear. In order to investigate the validity of this criticism, this study squarely places human rights considerations in China's aid allocation (both within and outside Africa) as the focus of inquiry. The next section provides a detailed explanation of our chosen human rights measures.

2.5. Operationalizing the Respect for Human Rights

Human rights refer to a rather broad spectrum of values; therefore, it is crucial that we fully explain our human rights measure at the outset. The notion of human rights extends to a variety of economic, social, and political rights, regardless of race, sex, nationality, religion, or any other status (United Nations, 2018). The aid allocation literature, however, focuses mainly on first-generation notions of human rights which deal primarily with liberty and participation in political life so are fundamentally civil

and political in nature. The literature has excluded the second-generation notions of human rights, which are fundamentally economic, social and cultural in nature. The reason for this exclusion is that governments can be better held accountable for violations of first-generation rights, while the respect for the respect for second-generation rights can at times be beyond government's capacity. Therefore, it is hard to distinguish whether low achievement of second-generation rights is a result of negligence or vicious government activity or the consequence of underdevelopment and poverty. In the latter case, such countries should be allocated more rather than less aid (Findley et al., 2010).

Consistent with this understanding, some measures have been developed in the past to compare the respect of human rights across countries. The study uses three commonly used proxy variables to measure respect for human rights in a country. These are 1) Political Terror Scale (PTS); 2) Physical Integrity Rights (PIR) and; 3) Civil Liberties (CL). All of these measures are standard measures that construct a set of human right criteria for different levels, and they are used to rate governments' human rights practices. Table 2.1 summarises the three measures of human rights by listing their indicators, data sources and scale of measurement.

Table 2.4: Summary of Human Rights Measures

	Political Terror Scale (PTS)	Physical Integrity Rights Index (PIR)	Civil Liberties (CL)
Indicators			
Disappearance	✓	✓	
Torture	✓	✓	
Extrajudicial Killing	✓	✓	
Political Imprisonment	✓	✓	
Freedom of Expression			✓
Freedom of Assembly and Association			✓
Freedom of Education			✓
Freedom of Religion			✓
Freedom of movement and residence			✓
Equality of rights without discrimination			✓
Hearing before an independent and impartial judiciary			✓
Protection of privacy, family, and home			✓
Data Source	The PTS project	CIRI Human Rights Data Project	Freedom House
Scale	1 to 5 (low to high respect for human rights)	0 to 8 (low to high respect for human rights)	1 to 7 (low to high respect for human rights)

Description of the three human rights measures is as follows:

2.5.1. Political Terror Scale

PTS is a commonly used indicator of human rights in the aid allocation literature. It is based upon the indicators of torture, extrajudicial killing, political imprisonment, and disappearance. These violations of physical integrity are among the most serious violations of human rights, and there is no justification whatsoever of such brutal governmental activity. PTS is not synonymous with terrorism, but instead, it is named because governments that tolerate such activities are blameworthy of political

terrorism (Scale, 2011). Specifically, PTS captures the extent to which individuals within the recipient country have their physical body violated by the state itself. It is measured on an ordinal scale ranging from 1 (worst or highest political terror best) to 5 (best or lowest political terror)[22]. PTS is based on a codification of country information from two sources, i.e., Amnesty International and the US State Department Country Reports on Human Rights Practices. Following Poe et al., (2001), we average these to comprise an index of political terror. Although the data from both the sources are highly correlated (r=0.9), an advantage of averaging them is that it corrects the often-biased reports of the State Department with the politically neutral Amnesty International reports (Poe et al., 2001).

The annual publications on human rights conditions published by Amnesty International and the US State Department contain a range of separate reports on human rights practices across countries. PTS treats these constituent reports as the units of observation and codes a separate score for each constituent report each year. The scores are assigned in accordance with "the prevalence of political imprisonment, disappearances, torture, political murder, and other forms of politically motivated violence within a country" (Scale, 2011). Neumayer (2003) has used PTS as an indicator of human rights for analysing aid allocation. He emphasised that PTS scales have "a clear focus on what constitutes the very core of human rights" (Neumayer, 2003). Table 2.2 provides an interpretation of the scoring criteria of PTS.

[22] We reverse this order for ease of comparison across measures so that our human rights measure runs from minimal respect at lower values to greater respect at higher values.

Table 2.5: Codification of PTS

	Political Terror Scale
1	"Terror has expanded to the whole population. The leaders of these societies place no limits on the means or thoroughness with which they pursue personal or ideological goals."
2	"Civil and political rights violations have expanded to large numbers of the population. Murders, dis-appearances, and torture are a common part of life. In spite of its generality, on this level terror affects those who in-terest themselves in politics or ideas."
3	"There is extensive political imprisonment, or a recent history of such imprisonment. Execution or other political murders and brutality may be common. Un-limited detention, with or without a trial, for political views is accepted."
4	"There is a limited amount of imprisonment for nonviolent political activity. However, few persons are affected, torture and beatings are exceptional. Political murder is rare."
5	"Countries under a secure rule of law, people are not imprisoned for their views, and torture is rare or exceptional. Political murders are extremely rare."

Source: The Political Terror Scale

2.5.2. Physical Integrity Rights Index

Additionally, the study uses CIRI's Physical Integrity Rights, hereafter PIR, as an alternate measure of physical integrity rights. The measure ranges from 0 (least respect for human rights) to 8 (best respect for human rights).[23] CIRI's PIR and PTS are based on the same source material, and they broadly measure the same violations, i.e., execution, torture, forced disappearance, and political imprisonment. However, they mainly vary in terms of their coding rules and compilation. For example, Goderis and Versteeg (2012) highlighted that "physical integrity index codes only violations against citizens and excludes all violations conducted beyond a nation's internationally recognized borders or directed against foreign nationals." Whereas, the political terror

[23] Full details on its construction can be found in: David L. Cingranelli and David L. Richards. 1999. "Measuring the Level, Pattern, and Sequence of Government Respect for Physical Integrity Rights." International Studies Quarterly, Vol 43.2: 407-18.

scale does not exclusively focus on citizens and considers human rights incidents abroad, such as those at Guantanamo Bay detention camp and Abu Ghraib (Goderis and Versteeg, 2012, pp. 139). Note that both the PTS and physical integrity index capture only state violence and exclude all cases of human rights abuse by private actors. One limitation of using Physical Integrity Rights is that the data on this measure is available only until 2011.

2.5.3. Civil Liberties

Lastly, the study uses Freedom House (2000) data for measuring civil liberties within a country. CL is based on surveys among experts assessing the extent to which a country adequately respects civil liberties, i.e., freedom of assembly, the right to open and free discussion, independence of media, freedom of religious expression, the prevalence of the rule of law, security of property rights, freedom to choose marriage partners and the size of the family. It is measured on a scale of 1 (countries with the lowest level of freedom) to 7 (countries with the highest level of freedom).[24] Table 2.3 provides codification criteria for CL.

[24] We reverse this order for ease of comparison across measures so that our human rights measure runs from minimal respect at lower values to greater respect at higher values.

Table 2.6: Codification of CL

	Civil Liberties
1	"Countries having few or no civil liberties. They allow virtually no freedom of expression or association, do not protect the rights of detainees and prisoners, and control most economic activity."
2	"Countries have very restricted civil liberties. They strongly limit the rights of expression and association and frequently hold political prisoners. They may allow a few civil liberties i.e., some religious and social freedoms, some highly restricted private business activity, and some open and free private discussion."
3-5	"Countries with a rating of 3, 4, or 5 include those that moderately protect almost all civil liberties to those that more strongly protect some civil liberties while less strongly protecting others. The same factors that undermine freedom in countries with a rating of 2 may also weaken civil liberties in those with a rating of 3, 4, or 5, but to an increasingly greater extent at each successive rating."
6	"Countries have slightly weaker civil liberties because of some factors i.e., limits on media independence, restrictions on trade union activities, and discrimination against minority groups and women."
7	"Countries enjoy a wide range of civil liberties, including freedom of expression, assembly, association, education, and religion. They have an established and generally fair system of the rule of law, allow free economic activity, and tend to strive for equality of opportunity for everyone, including women and minority groups."

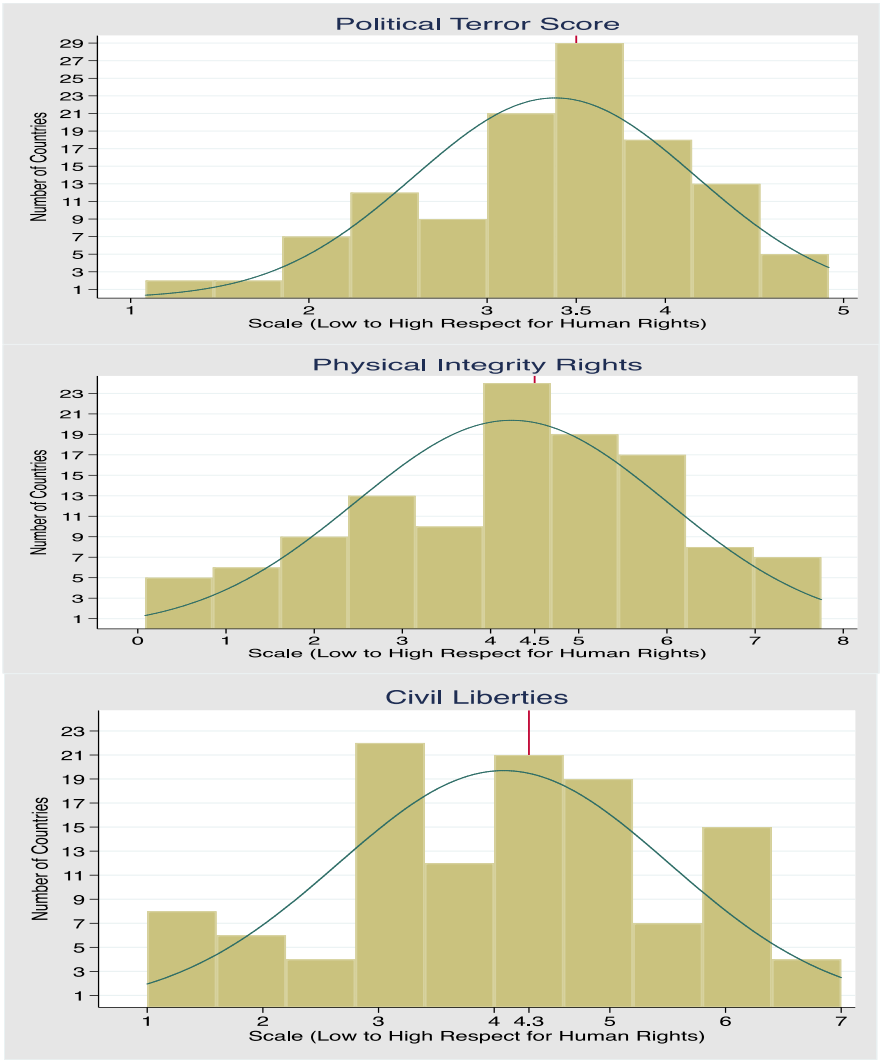
Source: Freedom House

2.6. Overview of Human Rights Measures

Now that we have defined our human rights measures, this section presents an overview of some stylised facts on the three measures. We begin by looking at the data for 125 aid-recipient countries on their human rights ranking. Figure 2.1 plots the total number of countries on each score of the individual human rights measures on the vertical axis. Note that the scales are different, but the number of countries is the same. The human rights scores have been averaged over the 12 years period from 2000 to 2011 (due to the last data point on PIR). The red vertical line at the back of density plot represents median values, i.e., 3.5 for PTS; 4.5 for PIR and 4.3 for CL. We will use these values later in our analysis to identify the set of countries with low/high

respect for human rights. The shape of the density plots for PTS and PIR looks rather similar, but with a slight left shift and lower peak in the case of PTS. The similarity is obvious because they capture the same violations of physical integrity rights. Most of the countries score within the range of 3 to 4 on PTS scale, and between 3 to 6 on PIR scale. Whereas, the shape of the density plot for CL is clearly different from the rest. This was expected as CL captures fundamental violations of civil liberties which overlaps only slightly with physical integrity rights.

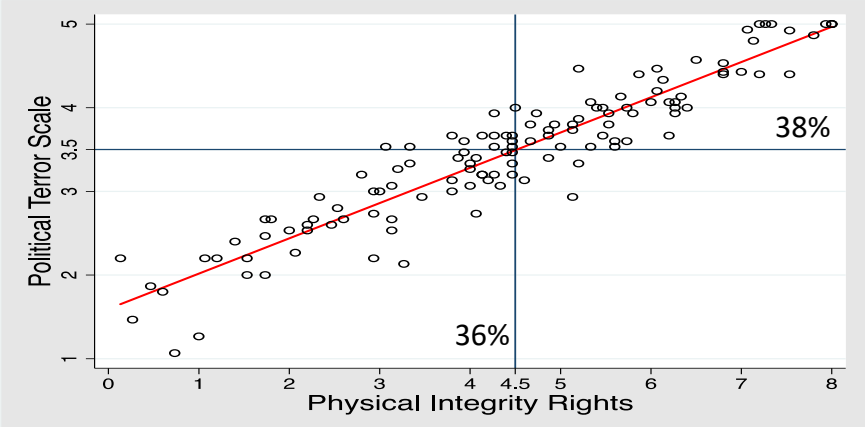
Figure 2.1: Distribution of Countries on Human Rights Measures (World, 2000-2011)



Data Source: The Political Terror Scale, CIRI Human Rights Data Project, Freedom House.

As a next step, we analyse correlations between the three human rights measures. Specifically, we want to evaluate the degree of correlation between PTS and PIR, which are the alternate measures of physical integrity rights. For this purpose, Figure 2.2 shows bivariate correlations between the two measures by plotting PTS on the vertical axis and PIR on the horizontal axis. The data comprise scores for 125 aid-recipient countries across the world. Each hollow bubble represents a country's score on the two human rights measures. Horizontal and vertical lines represent the median scores of two indicators. The second (top right) quadrant includes all the countries scoring above median across the two scales, i.e., countries with high respect for human rights. In contrast, the third (bottom left) quadrant includes countries with low respect for human rights across the two measures. As expected, the two measures turned out to be highly correlated with each other, providing further evidence that they indeed measure the same human rights violations with minor differences in their coding rules. At this point, we decided to safely proceed with PTS as it has the most recently updated data.

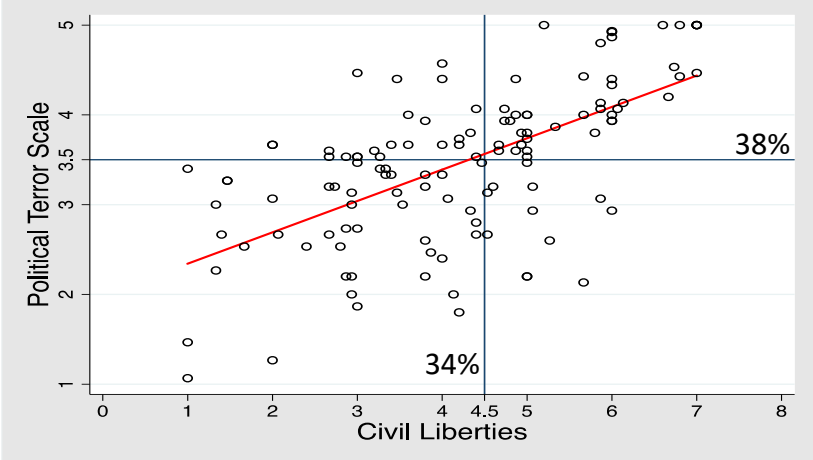
Figure 2.2: Correlations between Political Terror Scale and Physical Integrity Rights, 125 Countries (2000-2011)



Notes: Correlation coefficient (r) = 0.93. Data Source: The Political Terror Scale, CIRI Human Rights Data Project.

Figure 2.3 repeats the same exercise as Figure 2.2 but swapped the horizontal axis with CL. As discussed above, the two scales measure quite distinct aspects of a country's human rights record. This is indicated by the relatively modest correlation between them. There are some countries in the first and fourth quadrant which are above/below median on either scale. We are mainly interested in the bottom left quadrant in order to identify the set of countries with low respect for human rights on both scales. Within the 125 aid-recipient countries across the world, we find an almost equal proportion of countries above and below medians, i.e., 38% and 34% respectively.

Figure 2.3: Correlations between Political Terror Scale and Civil Liberties, 125 Countries (2000-2011)

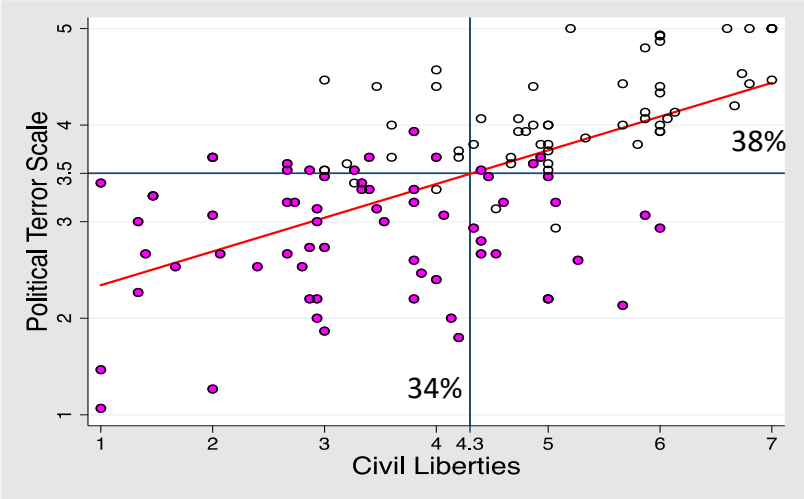


Notes: Correlation coefficient (r) = 0.6. Data Source: The Political Terror Scale, Freedom House

As a robustness check, we also include countries with low respect for human rights on PIR in Figure 2.4 by separating them with purple colour. It allows to identify the countries scoring below median on all three measures, ruling out the possibility of any coding bias. As we can see from the bottom left quadrant, if a country's score is below median on PTS and CL, it is also scoring below median on PIR. It verifies that our

choice of PTS over PIR is safe, and if a country is scoring below median on one of the indicators, it is scoring below median on the other two indicators as well. Figure 2.4 thus strengthens our confidence in the human rights measures to be used in the empirical analysis. Since we will be employing the two measures together in our empirical model, we can be reasonably confident that our key explanatory variables are actually picking up the respect for human rights across countries.

Figure 2.4: Countries with Low Respect for Human Rights on PTS, CL and PIR, 125 Countries (2000-2011)

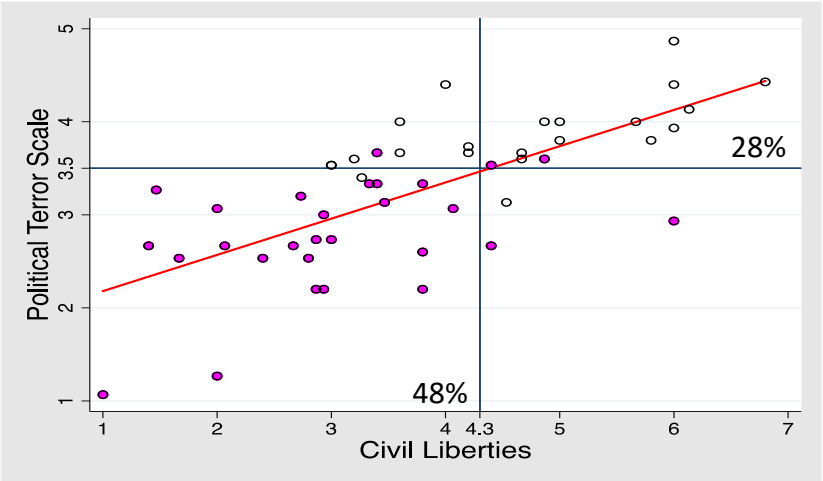


Data Source: The Political Terror Scale, CIRI Human Rights Data Project, Freedom House.

Since most of the criticism on China's aid is focused on Africa, we specifically wanted to look at the human rights record of African countries. Figure 2.5 thus drops all other countries except for Africa, reducing the sample to 50 recipient countries. We can see that the human rights record of African countries is not reflective of the world as it has a disproportionately large number of countries which are below median across the three measures, i.e., 48% of the African countries are concentrated in the bottom left quadrant, signifying that half of the African countries have low respect for human

rights. Whereas, only 28% of African countries lie in the top right quadrant representing countries with high respect for human rights. The regression analysis in Section 8 will, therefore, have a special focus on Africa.

Figure 2.5: Countries with Low Respect for Human Rights on PTS, CL and PIR, 50 African Countries (2000-2014)



Data Source: The Political Terror Scale, CIRI Human Rights Data Project, Freedom House.

2.7. Bivariate Analysis of Human Rights and Aid Allocation

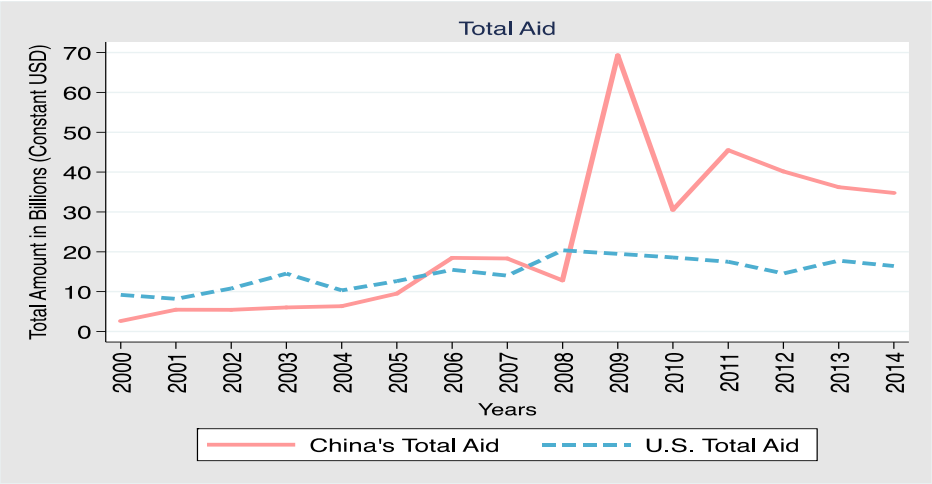
We now start investigating the validity of the assertion that China provides more of its aid to human rights abusing countries than does the U.S. We will first look at the context by comparing the overall trend, and the regional distribution of China's and US's aid flows to 125 recipient countries across the world from 2000 to 2014. We shall then analyse the bivariate correlations between human rights measures and total aid allocations of China and the US respectively over the 15 years period. Finally, we will split the bivariate analysis into humanitarian and non-humanitarian aid in recognition of the fact that humanitarian emergencies are likely to influence aid allocation decisions irrespective of recipient countries' respect for human rights.

The data on the provision of China's aid to various recipient countries have been taken from 'Global Coverage of Chinese Aid' published by AidData, and that of US aid has been taken from OECD database. Our definition of aid includes both ODA and OOF. Figures are reported in constant 2011 USD by using the DAC deflator.[25]

Figure 2.6 shows the time-series trend of China's and US aid flows. In the initial years, China's total aid volume is always smaller than that of US. Specifically, China disbursed around 2 billion USD in the year 2000, whereas the aid budget of US stood at 10 billion USD. During the first 5-year period, China gradually started to expand its aid spending. After a slow start, China's aid steadily increased, and we can see that China quickly surpassed US aid volumes after 2005. China's aid volume stayed over 10 billion USD in the middle period and reached its peak in the year 2009 at around 70 billion USD. This was the period when China's Development Bank (CDB) offered long term loans to national energy companies and government entities in Russia, Turkmenistan, Ecuador and Venezuela (Downs, 2011). CDB had lent Russian oil companies alone 35 billion USD in return for future oil supplies at a time when no other traditional donor was willing to provide such long-term loans (Downs, 2011). While China's aid spending declined after 2009, it continued to give more aid than the US over the last 5-year period, ranging between 30 to 45 billion USD per year. Whereas, US aid was consistently below 20 billion USD throughout this period.

[25] DAC deflators removes the effect of both inflation and exchange rate changes on nominal figures.

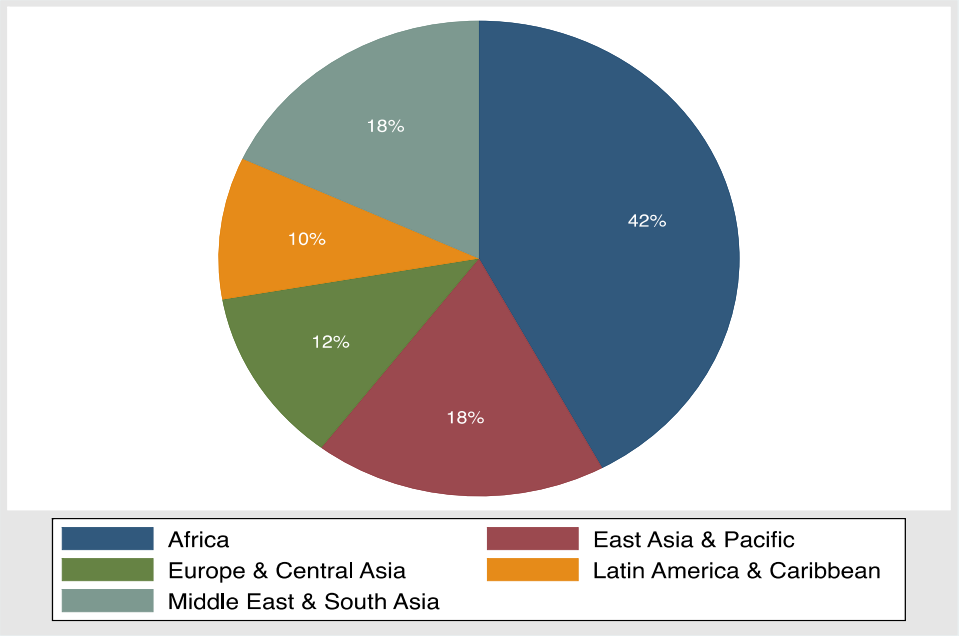
Figure 2.6: Trend of China's and US Total Aid (World, 2000-2014)



Data Source: AidData, OECD

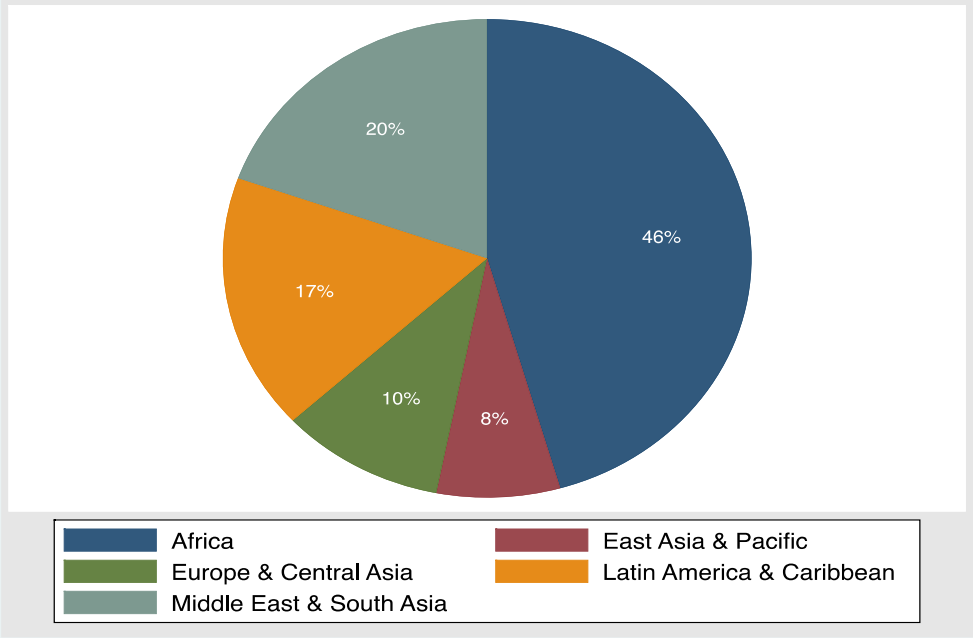
Now if we look at the regional distribution of China's and US aid in Figure 2.7 and 2.8, respectively, we can instantly see that Africa is the largest recipient of aid from both donors. Africa accounts for 42% of China's aid volume and 46% of US aid volume. It reflects that both the donors have dedicated considerable attention to the region. The Middle East and South Asia and East Asia and the Pacific are receiving an equal, second-highest share of China's aid. The Middle East and South Asia is also the second region that receives substantial US aid. Overall, the two figures show that both China's and US aid has a special focus on Africa; nevertheless, both donors maintain a global outlook, providing aid to all regions.

Figure 2.7: Regional Distribution of China's Aid (World, 2000-2014)



Data Source: AidData, OECD

Figure 2.8: Regional Distribution of US Aid (World, 2000-2014)



Data Source: AidData, OECD

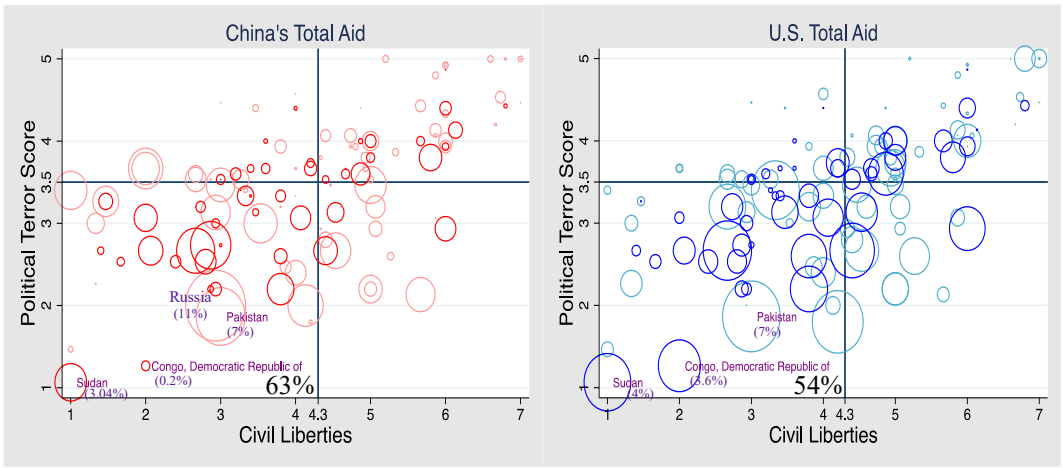
Next, in Figure 2.9, we look at correlations between recipients' respect for human rights and aid allocation decisions of China and the US over the 15-year period. The horizontal and vertical axis show PTS and CL, respectively. Each bubble represents a recipient country and its position reflects a country's score on each of the two human rights measures. The horizontal and vertical lines indicate the median score of each measure.[26] The lower the score, the lower the respect of human rights in a country. The size of the bubble represents the total share in China's and US aid received by a country over the 15-year period. The left panel with red bubbles represents the share of a given recipient in China's aid and the right panel with blue bubbles represent share of a given recipient in US aid. We use shares to compare the relative importance of recipients' respect for human rights in China's and US aid allocation across recipient countries. The larger the size of the bubble, the higher the aid share. The darker shade bubbles are African countries, and the lighter ones reflect recipients from the rest of the world. We are interested in assessing China's and US aid allocation to countries with least respect for human rights in the bottom left quadrant, which are below median across both human rights measures.

Starting from the left panel for China, most of the big bubbles are found in the bottom left quadrant. On the face of it, this provides support for criticism of China's aid policy, that countries with low respect for human rights receive a large share in China's aid. In particular, Sudan, the country with the lowest respect for human rights across both scales, received a 3% share in China's aid. Russia and Pakistan are two non-African countries with low respect for human rights that received relatively high shares in

[26] Note that human right scores have been averaged over the 15-year period.

China's aid, i.e., 11% and 7% respectively. The total share of China's aid going to the countries in the bottom left quadrant equals 63%. What is more surprising is that when we turn to the US data, depicted in the right panel, it looks little different than China with many big bubbles lying in the bottom left quadrant. Notice that Sudan received an even greater share in US aid (4%). Other big recipients with low respect for human rights are Pakistan (7%), Ethiopia (5%), and Democratic Republic of Congo (4%). The total of US aid received by countries in the bottom left equal 54% which is not far below the 63% figure for China. To sum up, in contrast to popular rhetoric, we do not find big differences on the role of human rights in the aid allocation decisions of China and the US. In fact, the shares of aid going to countries with poor human rights records are quite similar.

Figure 2.9: Share of Recipient Countries in China's and US Total Aid (World, 2000-2014)



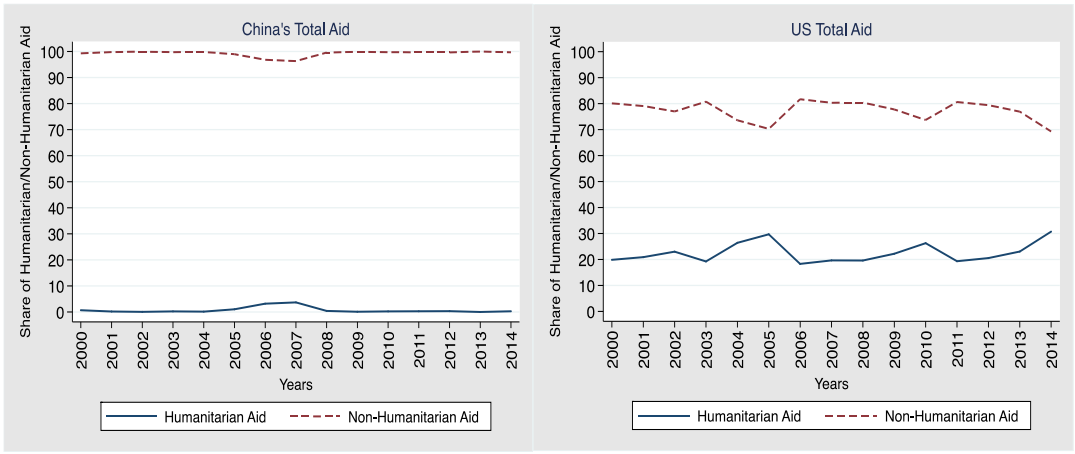
Notes: The size of the bubble represents the proportion of aid received by a country. The bubbles with darker color represent African countries. Data Source: US Department of States, Freedom House, AidData, OECD.

However, it is worth looking at the data in more detail. These findings alone are not sufficient to criticise either donor of giving more aid to countries with low respect for human rights. A key point is that aid flows may be directed to countries facing humanitarian emergencies.

In order to investigate the extent to which humanitarian emergencies influence aid allocation, we disaggregate total aid into humanitarian and non-humanitarian aid. Humanitarian aid will generally disregard human rights and be focused purely on recipients' needs. Denying some kinds of aid on the basis of poor human rights record seems justified but denying crucial aid in the aftermath of natural disasters seems cruel. The OECD classifies humanitarian aid as the funds or commodities geared towards satisfying the most basic human and immediate needs. This form of aid is mainly used in emergency response, food aid, reconstruction relief and rehabilitation, disaster prevention and preparedness (OECD, 2011). The rest of the total aid has been grouped together as non-humanitarian aid.

Figure 2.10 compares the time series of China's humanitarian/non-humanitarian aid shares with those of the US for 15 years from 2000 to 2014. It is apparent that a very small proportion of China's total aid is officially classified as humanitarian aid. Whereas, the US humanitarian aid ranges from 20% to 30% of the total.

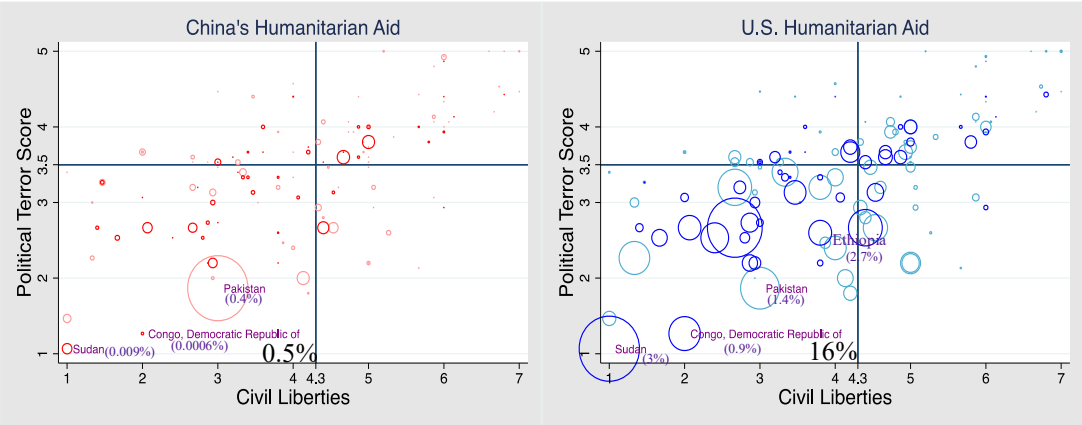
Figure 2.10: China's and US Humanitarian and Non-Humanitarian Aid Shares (World, 2000-2014)



Data Source: AidData, OECD.

If we now redrew Figure 2.9 showing only the part of total aid that is classified as humanitarian, a different picture emerges. First, very little humanitarian aid is given by China which is reflected in the smaller circles. But if we add up the total share of US aid that is classified as humanitarian, we see that 16% of total US aid is directed towards the humanitarian sector to countries with low respect for human rights. A first glance at the figure suggests that countries with low respect for human rights mainly receive humanitarian aid from the US. Specifically, Pakistan receives 1.38% of US humanitarian aid, whereas, Sudan receives 3.3%. As we can now see that the US is mainly giving humanitarian aid to Sudan, the higher share of Sudan in US total aid seems justifiable despite its poor human rights record.

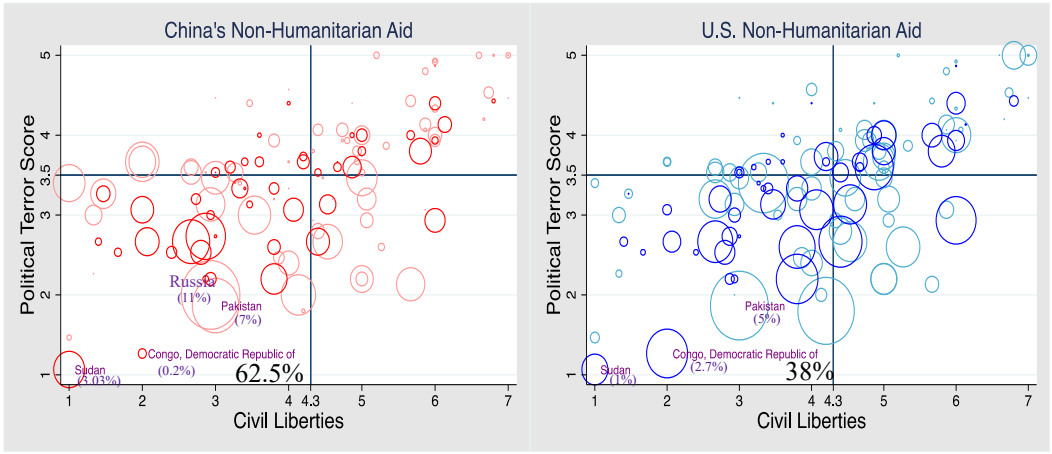
Figure 2.11: Share of Humanitarian Aid in China's and US Total Aid (World, 2000-2014)



Notes: The size of the bubble represents the proportion of aid received by a country. The bubbles with darker color represent African countries. Data Source: US Department of States, Freedom House, AidData, OECD.

Note that in the initial comparison based on Figure 2.9, there was little difference between China's 61% and US 54% of the total aid given to countries in the bottom left quadrant. However, Figure 2.11 shows that 16% out of the US's 54% is classified as humanitarian aid, and for China, it is only 0.5%. A truer comparison of any bias in aid flows to countries with a poor human rights record should thus be based on non-humanitarian aid. This is shown in Figure 2.12, and while the US still does send a substantial proportion of its non-humanitarian aid to countries in the bottom left quadrant, the appropriate comparison is now between China's 62.5% and the US 38% (as opposed to 63% and 54%). This clearly adds some weight to the critique of China's aid policy but still does not leave the US blameless.

Figure 2.12: Share of Recipient Countries in China's and US Non-Humanitarian Aid (World, 2000-2014)



Notes: The size of the bubble represents the proportion of aid received by a country. The bubbles with darker color represent African countries. Data Source: US Department of States, Freedom House, AidData, OECD.

To sum up, through bivariate analysis of aid flows and human rights measures, we have demonstrated that differences in the patterns of China's and US aid allocations have been exaggerated. We have found some evidence in support of claims made against China's aid going to countries with a poor human rights record, but the US seems little different in providing aid to these countries. However, we have also shown that this picture changes somewhat once we separate aid into humanitarian and non-humanitarian components. At least part of the US aid allocation seems justifiable since despite going to recipients with poor human rights record, the aid aims to help them deal with humanitarian crises. In contrast, China's aid to these countries is dominated by non-humanitarian aid. It is possible that the Chinese data does not use the same methodology to attribute aid to humanitarian or non-humanitarian categories. Nevertheless, all these stylised facts are based on simple correlations and we have not yet controlled for other standard determinants of aid allocations. The next section takes the analysis further using regression analysis.

2.8. Methodology

Our regression analysis investigates the importance of countries' human rights records in aid allocation decisions of China and US to 125 developing countries from 2000 to 2014 while controlling for other key determinants. We are particularly interested in comparing how different is China's aid allocation from the US with regards to its sensitivity towards recipient countries' respect for human rights. Following hypotheses will be tested in this regard:

Hypothesis 1. *China allocates more aid to a recipient country with a poor human rights record than to a recipient country with good human rights record, ceteris paribus.*

Hypothesis 2. *The US allocates less aid to a recipient country with poor human rights record than to a recipient country with good human rights record, ceteris paribus.*

Initially, we jointly estimate China's and US aid allocation decisions in one equation in order to compare their aid allocation behaviour directly. In other words, we pooled the data on China's and US aid. A disadvantage of this approach is that t constraints the variance of the residual to be the same in the two groups. A dummy variable is introduced which takes a value of 1 for the US and 0 for China. The dummy is then interacted with each explanatory variable in the model, allowing the coefficients of explanatory variables to be different across the two donors. This strategy has been previously used in aid allocation studies to compare the determinants of aid allocation across donors (see, for example, Berthelemy, 2006; Dreher et al., 2011; Dreher and Fuchs, 2011 and Fuchs and Krishna, 2013). We expect similar results from the pooled

and separate regressions if the variance of residuals across China and the US are equal. However, the magnitude and significance of coefficients varied widely, indicating that the results obtained from the pooled equation are not robust to the assumption on error variance.[27] We, therefore, relax the assumption of equal variance and estimate separate equations for each donor:

$$China's\ Aid\ Share_{jt} = \alpha_0 + \alpha_1 PTS_{j(ma)} + \alpha_2 CL_{j(ma)} + \alpha_3 Recipients'\ Needs_{jt-1} + \alpha_4 Donors'\ Interests_{jit-1} + \alpha_5 Other\ Controls_{jt-1} + \lambda_j + \gamma_t + \varepsilon_{jt} \quad (1)$$

$$US\ Aid\ Share_{jt} = \alpha_0 + \alpha_1 PTS_{j(ma)} + \alpha_2 CL_{j(ma)} + \alpha_3 Recipients'\ Needs_{jt-1} + \alpha_4 Donors'\ Interests_{jit-1} + \alpha_5 Other\ Controls_{jt-1} + \lambda_j + \gamma_t + \varepsilon_{jt} \quad (2)$$

In line with the bivariate analysis, the dependent variable is constructed as the share of aid received by a recipient country *j* from donor *i* (i.e., China and the US) in year *t*. Prior literature has addressed the inadequacies of using traditional Ordinary Least Squares (OLS) to predict bounded responses between zero and one. The issue is that OLS may produce predicted values that lie outside the interval determined by the measurement scale (Clist, 2011). This may provide a reasonable approximation for predictions close to the mean but is likely to give biased predictions for the extreme values zero and one (Brown and Dunn, 2011), which appear in high numbers in the current data. Therefore, we estimate the model using the fractional logit method. Gallani and Krishnan (2017) explained a number of advantages of using fractional logit, i.e., it accounts for the boundedness of the dependent variable from both above and below without having to manipulate the data. Moreover, it predicts response values within the interval limits of the dependent variable and yield a higher fit

[27] Results are put in Appendix A.4.

compared to OLS by capturing the nonlinearity of the data. The use of fractional logit is increasingly becoming common in foreign aid literature. For example, Acht et al., (2014) and Fuchs et al., (2015) have used the fractional logit model to estimate the factors associated with traditional donors' aid allocation.

Continuing with the description of the equation, respect for human rights in a recipient country is the key explanatory variable measured from *PTS* and *CL*. The two variables will be used to test whether recipient countries' respect for human rights impacts on aid allocation decisions made by China and the US. Having controlled for other determinants, a positive estimated coefficient on PTS/CL indicates that a country with a better human rights record will receive more aid than a country with a poor human rights record ceteris paribus. If China or US disregards human rights when providing aid, but focuses instead on other determinants of aid allocation, we expect no significant effect. As the institutional variables do not vary much over time, we have taken lagged 3-year moving averages of these variables, i.e., $(PTS_{t-1} + PTS_{t-2} + PTS_{t-3})/3)$.[28] In other words, the first data point on PTS in 2000 shows the 1997-1999 average and the final in 2014 shows the 2011-2013 average. Detailed description of these variables can be found in Section 2.

In keeping with previous research, we include standard control variables which capture the impacts of *Recipient's Needs* and *Donor's Interest* to control for the effects of factors other than human rights practices. Recipient needs are measured by 1) log GDP per capita in constant US dollars. The higher the GDP per capita, the less aid is needed so we expect a significant negative coefficient; 2) log number of people affected by

[28] Results are robust to using 5-year moving averages.

disasters (per 1000 people). Donors respond to humanitarian emergencies by providing aid. The data on natural disasters are taken from the Emergency Events Database (EM-DAT). The data are limited to natural disasters such as volcanoes, earthquakes, floods, winds, droughts and landslides.

Donor interests are a much trickier concept to measure. Earlier studies have used a range of measures with varying degrees of success. One of the commonly used indicators is the United Nation General Assembly (UNGA) voting affiliation with the donor. Countries voting in line with the donor country in the UNGA are expected to receive more aid from that country. Data on UNGA voting affiliation has been taken from Strezhnev and Voeten (2013). It measures voting compliance mean with the donor in the UNGA by a recipient country in a year on a scale of no compliance (0) to full compliance (1). Also, if the donor votes in favor or against a proposition and the recipient country abstain, the vote is coded as 0.5.

Drawing upon previous studies, we also use log total trade between a donor and a recipient as an indicator of how a donor country's commercial interests might influence aid allocation. Trumbull and Wall (1994) find trade motives to be a significant positive factor in determining aid flows. We would, therefore, expect that the level of recipient's trade with donor to be positively related to the amount of aid it receives.

Some serious allegations have been made in the past that aid is used by donors to gain access to natural resources from recipient countries. To see whether this is the case, we use a variable, logged energy depletion representing the ratio of the value of the stock of energy resources to the remaining reserve lifetime. The stock of energy covers

coal, crude oil, and natural gas. If a higher value of resources remaining attracts more aid to the country, we expect to find a significant positive coefficient on this variable. Similarly, we use a variable measuring the mineral resources within each recipient country. Again, a significant positive coefficient implies that more aid is attracted to countries that have higher mineral stocks remaining.

Other Controls include 1) Control of Corruption Index compiled by the World Bank and 2) aid received from other non-US bilateral DAC donors and multilateral donors, i.e., IMF and World Bank. Corruption is an important measure of governance and there exists an apparent interdependence between human rights and corruption. Corruption and human rights violations thrive in the same environments and the tools to fight corruption can also serve as tools to fight human rights violations (Michael and Hajredini, 2010). Finally, traditional donors may coordinate their aid activities with each other by increasing aid flows to a country in receipt of aid from other bilateral or multilateral donors (see Frot and Santiso, 2011). China may also compete by providing more aid to a country where traditional donors are already present (see Hernandez, 2015).

λ_j represents recipient country fixed-effects; γ_t presents year fixed-effects; and ε_{jt} is the error term. Standard errors are clustered by donor-recipient pairs. All the time-varying explanatory variables are lagged by one year because aid allocations in the current year are based on observed information available at the time of making the decision from the previous year. The exception is the institutional variables which do not vary much over time, i.e., Political Terror Scale, civil liberties and corruption. A description of all variables along with the data sources is presented in Table 2.4. Table

2.5 presents the correlation matrix. As can be seen from the table, the correlation coefficients of the explanatory variables are relatively low. Summary statistics is presented in Table 2.6.

Table 2.4: Variable Description and Data Sources

Human Rights Measures	Expected Sign and Hypotheses
PTS measured on a scale of 1 to 5; CL measured on a scale of 1 to 7 (from low to high respect for human rights)	- China provides more aid to countries with low respect for human rights; + US does less aid to countries with low respect for human rights
Control Variables: 1) Recipient's Need	
GDP per capita (logged) in constant US$. Source: World Bank	- The lower the GDP per capita, the more aid is needed.
Total number of people affected by disaster per 1000 people (logged) Source: EM-DAT (2015) It measures total number of people requiring immediate assistance in the aftermath of a natural disaster. An event qualifies as a natural disaster if a) 10 or more people are reported killed; b) 100 or more people are reported affected/injured/homeless or; c) the government declares a state of emergency. Our discussion has been limited to natural disasters such as volcanoes, earthquakes, floods, winds, and landslides	+ Donors respond to humanitarian emergencies by increasing the aid flows
2) Donor's Interest (Commercial and Political)	
UNGA voting affiliation with donor: Voting compliance mean with donor in the UNGA by a recipient country in a year from 0 to 1 (from no to full compliance). Source: Strezhnev and Voeten (2012)	+ Countries voting in line with the donor in the UNGA receive more aid
Energy Depletion (logged): Ratio of the value of the stock of energy resources to the remaining reserve lifetime. It covers coal, crude oil, and natural gas. Source: World Bank	+ Aid is employed to secure access to energy resources
Mineral Depletion (logged): Ratio of the value of the stock of mineral resources to the remaining reserve lifetime. It covers tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite, and phosphate. Source: World Bank	+ Aid are employed to secure access to mineral resources
Total Trade with Donor (logged): Log of total bilateral trade (exports plus imports) with donor. Source: IMF Direction of Trade Statistics	+ Aid is used as a tool to promote trade
3) Other Controls	
Control of corruption index measured on a scale of -2.5 to +2.5 (most to least corrupt) Source: World Bank	- China provides more aid to corrupt countries; + US provides less aid to corrupt countries
Other Aid (logged): sum of all aid received from other non-US bilateral DAC donors and multilateral donors. Source: OECD	+ More aid is provided to countries receiving aid from other traditional donors.

Table 2.5: Correlation Matrix

	Political Terror Scale	Civil Liberties	GDP per Capita	People Affected by Disaster	Energy Depletion	Mineral Depletion	UNGA Voting Aff. with Donor	Total Trade with Donor	Control of Corruption Index	Aid from Other Donors
Political Terror Scale	1.000									
Civil Liberties	0.4428	1.000								
GDP per Capita	0.181	0.2507	1.000							
People Affected by Disaster	-0.3619	-0.0039	-0.1753	1.000						
Energy Depletion	-0.3008	-0.2417	0.3771	0.1872	1.000					
Mineral Depletion	-0.2434	0.0383	0.1225	0.2393	0.413	1.000				
UNGA Voting Aff. with Donor	-0.1507	-0.19	-0.1202	0.0874	-0.0699	-0.0453	1.000			
Total Trade with Donor	-0.3848	-0.1027	0.3892	0.3776	0.6227	0.5284	0.0482	1.000		
Control of Corruption Index	0.4676	0.6081	0.3368	-0.1338	-0.2186	-0.0501	-0.0748	-0.1716	1.000	
Aid from Other Donors	-0.2994	-0.0789	-0.4233	0.39	0.0614	0.2679	0.1272	0.235	-0.1851	1.000

Table 2.6: Summary Statistics

Variable	N	Mean	Std. Dev.	Min	Max
Recipients' Share in China's and US Total Aid (%)	3,696	0.08	0.02	0	0.35
Recipients' Share in China's and US Humanitarian Aid (%)	3,696	0.001	0.01	0	0.06
Recipients' Share in China's and US Non-Humanitarian Aid (%)	3,696	0.08	0.02	0	0.34
Political Terror Scale (ma)	3,638	3.33	0.90	1.00	5.00
Civil Liberties (ma)	3,766	4.16	1.57	1.00	7.00
GDP per Capita (t-1)	3,692	7.26e+10	2.24e+11	1.32e+07	2.62e+12
People Affected by Disaster (per 1000 people, t-1)	3,784	759	8547	0.00	342028
Energy Depletion (t-1)	3,694	2.24e+09	6.05e+09	0.00	5.52e+10
Mineral Depletion (t-1)	3,840	4.61e+08	1.87e+09	0.00	2.67e+10
UNGA Voting Aff. with Donor (t-1)	3,706	0.49	0.35	0.00	1.00
Total Trade with Donor (log, t-1)	3,715	18.05	3.10	5.99	26.88
Control of Corruption Index (ma)	3,874	-0.54	0.58	-1.79	1.21
Other Aid (log, t-1)	3,930	5.62	2.50	0.00	15.08

2.9. Results

Our empirical analysis proceeds in three steps. We begin by estimating our models on the sample of 52 African countries receiving China's and US aid from 2000 to 2014. Our analysis has a special focus on Africa as most of the critique of China's aid allocation practices is related to Africa. Moreover, Africa has a disproportionately large number of countries with high level of poverty and poor human rights record. Lastly, both China and the US allocate substantially more aid to Africa than other regions (see Figure 2.7 and 2.8). As a second step, we extend the analysis to all other recipient countries in the rest of the world to see if Africa is an outlier. It includes other four regions receiving aid namely: Europe and Central Asia, Latin America and

Caribbean, East Asia and Pacific, Middle East and South Asia.[29] Regional dummies are included in order to control for regional heterogeneity.[30] Europe and Central Asia is the reference category. Finally, we open our analysis to all 125 aid-recipient countries across the world to see if the results can be generalised to the entire pool of aid-recipient countries across the world.

2.9.1. Africa

The results for testing the hypotheses *H1* and *H2* are provided in Table 2.7, where Model 1 and 2 report the coefficients for China's and US aid respectively. The coefficients represent marginal effects at the mean of the explanatory variables. After controlling for other determinants, we find a significant positive relationship between China's aid and human rights. In other words, as human rights improve on PTS scale, the share of China's aid to these countries also increases. On the other hand, we find that China allocates 0.01% more aid to a recipient country with poor respect for human rights on CL scale than to a recipient country with good respect for human rights on CL scale, ceteris paribus. Although the magnitude of the coefficient is rather small, this empirical finding suggests that China's aid is negatively correlated with the respect of human rights in the recipient countries. The two human rights coefficients are significant at 1% and 10% level respectively. This pair of results presents two contradictory findings: China provides more aid to countries where violations of civil

[29] Middle East and North Africa were grouped together as one region due to the limited availability of data on the countries situated in these regions. This change in classification did not affect the results.

[30] Results are consistent with using recipient country dummies. Results are available upon request.

liberties of the individual citizens are higher, whereas, countries with good human rights record on PTS scale, for example, avoidance of disappearances and extrajudicial killing, are rewarded with more aid.

In order to better understand this contradictory finding, we split the sample into i) Countries below median on PTS; ii) Countries below median on CL; and iii) Countries below median on both PTS and CL (see Model 3-8). The idea is to see if the sensitivity of aid allocation towards human rights measures change if a country's human rights record is already below some threshold level, i.e., scoring below median on either or both the scales. We suspect that the contrasting relationship between China's aid and PTS/CL will either not hold, or flip its sign, in countries strictly below median on human rights measures. The key result on the positive relationship between recipients' share in China's aid and their PTS scores remains significant in all countries below median on either PTS or CL scales as well as both PTS and CL scales. Whereas, the negative relationship between China's aid and CL does not hold after splitting the sample based on the median values of the PTS and CL scores.

As a further robustness check, we put PTS and CL in our regression models one at a time rather than including them in the same regression. This is to check if the enigma in Model 2 about the contradictory relationship between China's aid and the two human rights measures is due to the correlation between PTS and CL scores. The results are in line with the findings from Models 4, 6 and 8 i.e., the positive relationship between China's aid and PTS holds after splitting the sample based on median values,

whereas, the negative relationship between China's aid and CL does not hold.[31] Overall, we can conclude that there is a strong positive correlation between China's aid allocation and respect for human rights within African countries.

Regarding the control variables, China's aid share is related to the number of deaths from natural disasters, with the expected positive sign. It reflects that more aid is directed towards disaster affected countries. To further evaluate this finding, we will split China's total aid share into humanitarian and non-humanitarian aid shares in Section 2.9.4. We also find that a higher share of China's aid is going towards lesser corrupt recipient countries. Besides, within countries below median on PTS and PTS and CL, we find some evidence that China provides a higher share of aid to countries rich in energy resources. This finding is in line with the critique that China's aid is motivated by a desire to secure natural resources. Other factors, such as political considerations and trade links do not appear to have any significant effect on China's aid allocation decisions. Contrary to our expectations, GDP per capita is never significant in any of the models reflecting China's aid allocation. One reason for its lack of significance could be the scale of our dependent variable i.e., aid shares rather than absolute amount of aid. We used aid shares because our objective was determining the relevance of human rights in China's aid allocation. Other studies in the literature have measured aid in absolute terms or logged values in order to determine the role of economic considerations in aid allocation.

[31] Results showing PTS and CL in separate regressions are reported in Appendix A.5.1 and A.5.2.

Moving on to the US, we find that recipient's respect for human rights is not a major determinant of US aid allocation to African countries, ceteris paribus. This result is consistent with similar findings reported by Carleton and Stohl (1985) and Stohl, Carleton and Johnson (1984) who found that recipients' respect for human rights does not matter in US aid allocation decisions. However, this finding is in conflict with the congressionally mandated positive association between US aid and human rights and the general expectations from US aid policy in the guise of human rights promotion (see Section 2 and 3 for details).

Next, we investigate this relationship looking only at recipient countries with below median scores on human rights measures (see Model 3, 5, 7). We suspect that the coefficients on human rights measures might become significant if US aid allocations penalise the countries with awful human rights records. The splitting of the sample has, however, left the US results undisturbed.

Looking across the US aid models and taking into account the influence of control variables, one possible explanation for the lack of significance of human rights variables could be competing considerations. For instance, addressing recipients' need, commercial interests, and coordination with DAC aid activities seem to overshadow human rights concerns, which might lead US decision-makers to compromise on their stance on human rights. For example, the control variables on GDP per capita, total trade with recipient and aid from other donors turned out to be significant with the expected positive sign. Another important finding for the US is that we find a significant negative coefficient for corruption within the sample of

countries below median on PTS and PTS and CL.[32] As corruption is a principal measure of governance and there exists an apparent interdependence between human rights and corruption, it is surprising to see more corrupt countries receiving a higher share in US aid. The correlation between US aid and corruption could partly be linked to the poverty in recipient countries as US aid could actually be helping the recipient countries in improving their institutional capacity and fighting for corruption.

[32] Control of corruption index is measured on a scale of -2.5 to +2.5 (most to least corrupt)

Table 2.7: China's and U.S. Total Aid Allocation to Africa
(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and U.S. Total Aid (%)	**All African Countries**		**Below Median on PTS**		**Below Median on CL**		**Below Median on PTS and CL**	
	US	**China**	**US**	**China**	**US**	**China**	**US**	**China**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Political Terror Scale (ma)	-0.0036	0.0120***	-0.0032	0.0147*	-0.0016	0.0159**	-0.0023	0.0181*
Civil Liberties (ma)	0.0004	-0.0092*	.00003	-0.0083	-0.0018	-0.0034	-0.002	-0.0025
GDP per Capita (log, t-1)	-0.0279	-0.02	-0.0472	-0.0476	-0.0348	-0.0529	-0.0473*	-0.106
People Affected by Disaster (per 1000 people, log, t-1)	0.0003	0.0013*	0.0006	0.0018	0.0007	0.0029	0.0009	0.0036
Energy Depletion (log, t-1)	0.0013	0.0017	0.0014	0.0077	0.0007	0.0092	0.0008	0.0168*
Mineral Depletion (log, t-1)	0.0008	0.0032	-0.0002	0.0058	0.0021	0.0078**	0.0019	0.0092**
UNGA Voting Aff. with Donor (t-1)	0.0008*	0.0042	0.0018***	0.0204	0.0014***	0.0195	0.0018***	0.0388**
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0251**	0.1285***	0.0555***	0.2138***	0.0429***	0.1644***	0.0604***	0.2355***
Control of Corruption Index (ma)	-0.0018	0.0127***	-0.0018	0.0259**	-0.0036*	0.0175*	-0.0048*	0.0208
Aid from other traditional Donors (log, t-1)	0.0041***	0.0012	0.0065***	0.0003	0.0047***	-0.0034	0.0060***	-0.0048
N	568	559	315	304	358	349	260	249

Notes: Dependent variable is the share of recipient country in the total China's and U.S. aid respectively in a year *t*. Country and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Model 3 and 4 are estimated for countries scoring below median on PTS; Model 5 and 6 are estimated for countries scoring below median on CL; Model 7 and 8 are estimated for countries scoring below median on both PTS and CL scales. Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

2.9.2. Rest of the World

The results from the sample of recipients in the rest of the world countries are reported in Table 2.8. It appears that our findings for the rest of the world sample are starkly different from those of Africa. For example, the significant relationship between China's aid an CL does not hold in countries outside Africa. More importantly, the US aid is negatively correlated with both PTS and CL scores i.e., a recipient country with poor human rights record on both PTS and CL scales is receiving a higher share in US aid than a country with good human rights record, ceteris paribus. The coefficient on PTS is strongly significant across all models in Table 2.8. Whereas, the result for CL is not robust to the disaggregated sample of countries below median on human rights measures. The differences in key results from Table 2.7 and 2.8 underscore the importance of our study by finding that donors treat Africa differently when it comes to the role that human rights play in aid allocations.

In contrast to recipients' needs, political and trade motives seem to influence both China and the US's aid outside Africa. Moreover, we found some support of Amusa et al., (2016) finding that lesser corrupt countries are receiving a higher share in China's aid (see Model 10 and 14) and some evidence in favour of the critique on China's hunt for mineral resources (see Model 16). However, these results are not robust to the selection of recipient countries.

Table 2.8: China's and US Total Aid Allocation to Rest of the World

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and US Total Aid (%)	**All Countries in Rest of the World**		**Below Median on PTS**		**Below Median on CL**		**Below Median on PTS and CL**	
	US	**China**	**US**	**China**	**US**	**China**	**US**	**China**
	(Model 9)	(Model 10)	(Model 11)	(Model 12)	(Model 13)	(Model 14)	(Model 15)	(Model 16)
Political Terror Scale (ma)	-0.0065**	-0.0013	-0.0112**	-0.002	-0.0098***	0.0009	-0.0103***	0.0095
Civil Liberties (ma)	-0.0062**	-0.0045	-0.0082	-0.012	-0.0024	-0.0111**	-0.0065	-0.0123
GDP per Capita (log, t-1)	-0.0136	0.0072	-0.0367	0.009	-0.0472*	0.0128	-0.0612*	0.0033
People Affected by Disaster (per 1000 people, log,t-1)	-0.0017*	-0.0003	-0.0023	-0.0038	-0.0017	-0.0012	-0.0040*	-0.0046
Energy Depletion (log, t-1)	0.0017	-0.002	0.0016	-0.0117**	0.001	-0.0114**	0.0002	-0.0182*
Mineral Depletion (log, t-1)	0.001	0.0023	0.002	0.0036	0.0011	0.0046	0.0055	0.0087**
UNGA Voting Aff. with Donor (t-1)	0.0025***	0.0253	0.0035*	0.0746*	0.0022	0.0556	0.0045*	0.1064**
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0171**	0.0550**	0.0307*	0.1405***	0.0415*	0.1182***	0.0608**	0.1775**
Control of Corruption Index (ma)	-0.0005	0.0049*	-0.0017	0.0033	-0.0028	0.0109*	-0.0041	0.0065
Aid from other traditional Donors (log, t-1)	0.0064***	-0.0021	0.0096***	-0.0014	0.0097***	-0.0021	0.0109***	-0.0083*
N	944	887	462	462	438	438	288	289

Notes: Dependent variable is the share of recipient country in the total China's and U.S. aid respectively in a year *t*. Country and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Model 11 and 12 are estimated for countries scoring below median on PTS; Model 13 and 14 are estimated for countries scoring below median on CL; Model 15 and 16 are estimated for countries scoring below median on both PTS and CL scales. Standard errors clustered by recipient countries. *** p<0.01,** p<0.05, * p<0.1.

2.9.3. All Recipient Countries across the World

Table 2.9 presents the results for all recipient countries across the world. Starting with the main variables of our interest, the key result for China's aid for CL from the world's sample is consistent with the African sample. Although this has a sizeable impact on its magnitude, which has further reduced, it remains significant. Whereas, US key result for PTS is in line with the results from the sample of rest of the world. For example, countries with poor human rights record on CL scale are receiving a higher share in China's aid. In contrast, countries with poor human rights record on PTS scale are receiving a higher share in US aid. It seems that, in the case of China, results for the African sample is driving the results of the world sample. On the other hand, US key results are driven by countries in the rest of the world.

As concerns other control variables, commercial trade interests seem to be important for both China and the US across the world. For example, countries trading more with China and the US are receiving a higher share in their aid. Moreover, political interest is found to influence China's aid to the recipients worldwide. For example, i) we find some evidence that countries voting in line with China in the UNGA are receiving a higher share in its aid. It might be the case that political and commercial interests of China are more relevant within countries outside Africa. Taken together, the two results are in line with the accusations that China provides aid to politically aligned and commercially important countries.

Table 2.9: China's and US Total Aid Allocation across World

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and US Total Aid (%)	**All Countries in the World**		**Below Median on PTS**		**Below Median on CL**		**Below Median on PTS and CL**	
	US	**China**	**US**	**China**	**US**	**China**	**US**	**China**
	(Model 17)	(Model 18)	(Model 19)	(Model 20)	(Model 21)	(Model 22)	(Model 23)	(Model 24)
Political Terror Scale (ma)	-0.0077***	0.0047	-0.0100***	0.0018	-0.0095***	0.0019	-0.0095***	0.0064
Civil Liberties (ma)	-0.002	-0.0023	-0.004	-0.0118***	-0.002	-0.0093***	-0.004	-0.0104**
GDP per Capita (log, t-1)	-0.0157*	-0.0512	-0.0144	0.0037	-0.0250*	0.0035	-0.023	0.0024
People Affected by Disaster (per 1000 people, log,t-1)	0.001	-0.00001	0.001	0.0001	0.0013	0.0019	0.0013	0.0008
Energy Depletion (log, t-1)	0.0001	-0.0009	-0.0004	-0.0094***	-0.0005	-0.0081***	-0.0009	-0.0128***
Mineral Depletion (log, t-1)	0.0009	0.0018	0.0021	0.001	0.0016	0.0018	0.0048*	0.0034
UNGA Voting Aff. with Donor (t-1)	0.0006	0.0114	0.0003	0.0528***	0.001	0.0243	0.0009	0.0555***
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0218***	0.0913**	0.0295**	0.1578***	0.0381**	0.1338***	0.0468**	0.2051***
Control of Corruption Index (ma)	-0.001	0.0035	-0.0019	0.006	-0.003	0.0100**	-0.0044	0.0083
Aid from other traditional Donors (log, t-1)	0.0077***	-0.0028	0.0102***	-0.0009	0.0087***	-0.0027	0.0101***	-0.0052
N	1459	1499	777	766	796	787	548	538

Notes: Dependent variable is the share of recipient country in the total China's and US aid respectively in a year *t*. Region and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Model 19 and 20 are estimated for countries scoring below median on PTS; Model 21 and 22 are estimated for countries scoring below median on CL; Model 23 and 24 are estimated for countries scoring below median on both PTS and CL scales. Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

2.9.4. Split between Humanitarian and Non-Humanitarian Aid

To further check our findings, we now investigate whether the key results are driven by aid flows directed towards addressing humanitarian emergencies. In other words, do countries with a low respect for human rights mainly receive a higher share of humanitarian aid. As discussed in Section 5.1., denying some kinds of aid on the basis of poor human rights record seems justified, but denying crucial aid given in the aftermath of natural disasters seems cruel.

For this purpose, we replace our dependent variable in Table 2.10 and 2.11 with humanitarian and non-humanitarian aid shares, respectively.[33] This disaggregation will help us in further testing the conclusion obtained from our bivariate analysis, i.e., US aid share to countries with poor human rights record is dominated by humanitarian aid and China's aid share to such countries is dominated by non-humanitarian aid. Since the statistics on the disaggregated forms of US aid are well-developed, in line with the US Foreign Assistance Act, we suspect that human rights considerations are relatively less important determinants for US total aid and humanitarian aid allocations, but it should matter for US non-humanitarian aid. For China, we want to investigate whether the share of countries with poor human rights record is still higher in its non-humanitarian aid after controlling for other determinant of aid flows. However, it is important to mention at the outset that the split between humanitarian and non-humanitarian aid might be miss-classified in China's aid data and the results might not be clear.

[33] See Section 2.5.1 for the details on Humanitarian and Non-Humanitarian aid.

We find a negative correlation between China's humanitarian aid and CL except for countries situated in Africa. However, the magnitudes of coefficients are very small. The small and insignificant coefficients on the explanatory variables for China's aid might be because China gives only a tiny proportion of its aid for humanitarian purposes. On the other hand, the share of countries with poor human rights records is higher in US humanitarian aid, ceteris paribus. This finding is in line with our bivariate analysis discussed in Section 6.

As concerns the non-humanitarian aid, the results are very similar in terms of its magnitude and significance to those of the base specification in Table 2.7 2.8 and 2.9, i.e., the coefficient on CL is negative and significant for the sample of Africa and all countries across the world for the case of China's aid. Whereas, the coefficient on PTS is negative and significant across all samples of countries within Africa, rest of the world and all countries across the world for the case of US aid. Overall, our key conclusions hold for non-humanitarian aid, confirming that the total aid results are not biased towards the aid provided in the aftermath of humanitarian emergencies.

Table 2.10: China's and US Humanitarian Aid Allocation

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and US Humanitarian Aid (%)	**All African Countries**		**All Countries in Rest of the World**		**All Countries across World**	
	US	**China**	**US**	**China**	**US**	**China**
	(Model 25)	(Model 26)	(Model 27)	(Model 28)	(Model 29)	(Model 30)
Political Terror Scale (ma)	-0.0031**	-0.00002	-0.0008**	-5.27E-07	-0.0015**	0.00003
Civil Liberties (ma)	-0.0038***	0.00004	-0.0006	-0.0003***	-0.0022***	-0.0001*
GDP per Capita (log, t-1)	-0.0037	-7.91E-06	-0.0054*	0.0015*	-0.0041	0.0003
People Affected by Disaster (per 1000 people, log,t-1)	0.0013***	8.32E-06	0.0001	6.54E-06	0.0007***	4.80E-06
Energy Depletion (log, t-1)	-0.0008	-4.99E-06	-0.0002	-0.0005***	-0.0004	-0.0002***
Mineral Depletion (log, t-1)	0.0001	0.00003	0.0001	0.0003***	0.0002	0.0002**
UNGA Voting Aff. with Donor (t-1)	-0.0003	-0.00004	0.0005**	-0.0004	0.0001	0.0001
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0087*	6.89E-06	0.0041**	0.0025**	0.0047	0.0006
Control of Corruption Index (ma)	-0.0011	0.00004*	0.0004	0.0005***	0.00002	0.0002**
Aid from other traditional Donors (log, t-1)	0.0019*	-2.76E-06	0.0012**	-0.0002	0.0012**	-0.00003
N	568	559	891	887	1459	1446

Notes: Dependent variable is the share of recipient country in China's and US humanitarian aid respectively in a year *t*. Country and year-fixed effects included in Model 25 and 26. Region and year-fixed effects are included in Models 27-30. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.11: China's and US Non-Humanitarian Aid Allocation

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and US Non-Humanitarian Aid (%)	**All African Countries**		**All Countries in Rest of the World**		**All Countries across World**	
	US	**China**	**US**	**China**	**US**	**China**
	(Model 31)	(Model 32)	(Model 33)	(Model 34)	(Model 35)	(Model 36)
Political Terror Scale (ma)	-0.0080***	0.0081	-0.0074***	-0.0015	-0.0058**	0.0003
Civil Liberties (ma)	0.0047**	-0.0077**	-0.0031	-0.0041	0.0005	-0.0055**
GDP per Capita (log, t-1)	-0.0126**	-0.0053	-0.0267**	0.0064	-0.0121*	-0.0001
People Affected by Disaster (per 1000 people, log,t-1)	0.0013**	0.0029**	-0.0007	-0.0003	0.0003	0.0006
Energy Depletion (log, t-1)	-0.0004	-0.0009	0.002	-0.0019	0.0005	-0.002
Mineral Depletion (log, t-1)	0.0025**	0.0013	-0.0001	0.002	0.0007	0.0003
UNGA Voting Aff. with Donor (t-1)	-0.0001	0.0091	0.0016**	0.0256	0.0004	0.0172*
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0271***	0.1058***	0.0169**	0.0539**	0.0180***	0.0764***
Control of Corruption Index (ma)	-0.001	0.0037	-0.0011	0.0047*	-0.0008	0.0043**
Aid from other traditional Donors (log, t-1)	0.0065***	0.0025	0.0060***	-0.002	0.0067***	-0.0012
N	568	559	891	887	1459	1446

Notes: Dependent variable is the share of recipient country in China's and US non-humanitarian aid respectively in a year *t*. Country and year-fixed effects included in Model 31 and 32. Region and year-fixed effects are included in Models 33-36. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7(from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

2.9.5. Cross-sectional Estimates (2000-2004; 2010-2014)

So far, we have estimated our sample for the 15-year period. Over time, China's aid has drastically changed with a notable increase following the year 2009 (see Figure 2.6). Since China's aid has considerably increased in the year 2009, in what follows we split our sample into two 5-year periods i.e., 2000 to 2004 and 2010 to 2014 (see Table 2.12-2.14).

Starting with the US, we find that the negative relationship between US aid share and PTS in the sample of countries in rest of the world and all countries across world is robust to the two five-year periods. The only exception is Africa, where we now find a significant negative relationship between US aid share and PTS scores. Recall the finding that, except for Africa, US allocates more aid to a recipient country with poor human rights record on PTS scale than to a recipient country with good human rights record, ceteris paribus. The splitting of the sample in 2 five-years period has extended the generalisability of our finding to all countries within Africa, rest of the world and worldwide. On the other hand, the key result for China is consistent only for the last five-year period within Africa only. It somehow indicates that the criticism levelled against China is mainly limited for the last 5-year period and for aid directed to Africa.

Table 2.12: China's and US Total Aid Allocation to Africa

(Fractional Logit, Cross-sectional Results)

Dependent Variable: Recipients' Share in China's and US Total Aid (%)	**2000-2004**		**2010-2014**	
	US	**China**	**US**	**China**
	(Model 37)	(Model 38)	(Model 39)	(Model 40)
Political Terror Scale (avg)	-0.0103***	0.0041	-0.0130***	0.0046
Civil Liberties (avg)	0.0036	-0.0002	-0.0041	-0.0109***
GDP per Capita (log, (avg)	-0.0033	0.0268	-0.0064	0.0250**
People Affected by Disaster (per 1000 people, log, avg)	0.0050***	0.0230***	0.0048*	0.0104***
Energy Depletion (log, avg)	-0.0011**	-0.0028	-0.0007	0.0013
Mineral Depletion (log, avg)	0.0015**	0.0034	0.001	0.0012
UNGA Voting Aff. with Donor (avg)	0.0065***	0.0283	-0.0094	-0.0045
Total Trade with Donor (% of Recipient's GDP, avg)	0.0144**	0.0733*	0.0383***	0.0821***
Control of Corruption Index (avg)	0.0013	0.0068*	-0.0046***	-0.0018
Other Aid (log, avg)	0.0065***	-0.0106	0.0191***	0.0130***
N	40	34	41	39

Notes: Dependent variable is the share of recipient country in the total aid allocated by China and US respectively, averaged over the two 5-year periods. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.13: China's and US Total Aid Allocation to Rest of the World

(Fractional Logit, Cross-sectional Results)

Dependent Variable: Recipients' Share in China's and US Total Aid (%)	**2000-2004**		**2010-2014**	
	US	**China**	**US**	**China**
	(Model 41)	(Model 42)	(Model 43)	(Model 44)
Political Terror Scale (avg)	-0.0120**	-0.0052	-0.0115**	-0.0041
Civil Liberties (avg)	0.004	-0.0004	-0.0098**	-0.0031
GDP per Capita (log, (avg)	-0.0134	-0.0553*	-0.0361	0.0484
People Affected by Disaster (per 1000 people, log, avg)	-0.0029	-0.009	-0.0029	0.0122
Energy Depletion (log, avg)	0.0047	0.004	-0.0014	-0.0047
Mineral Depletion (log, avg)	-0.0021	-0.0079***	0.0001	0.0047
UNGA Voting Aff. with Donor (avg)	0.0024	-0.0222	0.0035	0.0235
Total Trade with Donor (% of Recipient's GDP, avg)	0.014	0.1992***	0.0408**	0.0263
Control of Corruption Index (avg)	-0.0007	0.0185**	-0.0019	0.0128**
Other Aid (log, avg)	0.0182***	0.0175	0.0089*	-0.0111
N	61	50	66	55

Notes: Dependent variable is the share of recipient country in the total aid allocated by China and US respectively, averaged over the two 5-year periods. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

Table 2.14: China's and US Total Aid Allocation to Countries across World

(Fractional Logit, Cross-sectional Results)

Dependent Variable: Recipients' Share in China's and US Total Aid (%)	**2000-2004**		**2010-2014**	
	US	**China**	**US**	**China**
	(Model 45)	(Model 46)	(Model 47)	(Model 48)
Political Terror Scale (avg)	-0.0096***	-0.0034	-0.0077**	-0.0016
Civil Liberties (avg)	0.0005	-0.0038	-0.006	-0.0042
GDP per Capita (log, (avg)	-0.0069	-0.0342	-0.0086	0.0254
People Affected by Disaster (per 1000 people, log, avg)	0.0009	0.003	0.0005	0.0071
Energy Depletion (log, avg)	0.0017	0.002	-0.0009	-0.0037
Mineral Depletion (log, avg)	-0.0008	-0.0019	-0.0002	0.0023
UNGA Voting Aff. with Donor (avg)	0.0040**	-0.0025	-0.0006	0.0123
Total Trade with Donor (% of Recipient's GDP, avg)	0.0158**	0.1132***	0.0212*	0.0603**
Control of Corruption Index (avg)	-0.0003	0.0100**	-0.0023	0.0070*
Other Aid (log, avg)	0.0108***	0.0013	0.0163***	-0.0014
N	101	84	107	94

Notes: Dependent variable is the share of recipient country in the total aid allocated by China and US respectively, averaged over the two 5-year periods. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

2.10. Conclusion

This chapter has examined the role of human rights in aid allocations of China and the US to recipient countries across the world. There is a lack of academic literature that formally assesses human rights considerations in aid allocations of China and the US; which is essential to determine whether the criticisms of China's aid policy in comparison to that of the US are justified.

The chapter began by reviewing the literature on traditional donors' motivations behind aid allocation; and the role of human rights in China's and US aid allocation. The majority of empirical work focusing on the time period of the Cold war until the early 2000s has yielded mixed results on the extent to which the US is genuinely committed to its foreign aid policy rewarding recipients' observance of human rights. However, more recent empirical studies have suggested that US decision-makers pay more attention to recipients' observance of human rights when making aid allocations. Our study extends this debate by assessing whether there is any change to the conclusions when examining the most recent US data. As concerns the empirical findings for China, the literature provides some clarity on the -rogue donor- image of China; however, the criticisms related to China's provision of aid to countries with poor human rights records is still unclear.

As a next step, we operationalised our human rights measures and presented a series of stylised facts on Political Terror Scale (PTS) and Civil Liberties (CL). We then show the regional distribution of China's and US aid and identified how Africa stands out as a region that received a substantial share in aid from both donors. This chapter

then contributes to the existing literature by presenting a bivariate analysis to put into perspective the relevance of human rights considerations in China's and US aid allocation. Finally, we controlled for other determinants of aid allocation and presented our empirical analysis.

The bivariate analysis demonstrated that a significant share of China's aid flows to countries with relatively poor human rights records, yet, the US seems little different in providing aid to these countries. The analysis further involved a split between humanitarian and non-humanitarian aid in recognition of the fact that humanitarian emergencies are likely to influence aid allocation decisions irrespective of recipient countries' respect for human rights. We find that US aid allocation seems justifiable after separating humanitarian and non-humanitarian aid because countries with poor human rights record mainly receive humanitarian aid from the US Whereas, China's aid to such countries is dominated by non-humanitarian aid.

As far as the regression analysis is concerned, the results suggest that donors treat Africa differently when it comes to the role that human rights play in aid allocations. Our findings for Africa is starkly different from rest of the world, i.e., the results focusing on the sample of African countries suggest that China provides more aid to countries with a poor human rights record on CL scale, whereas, we do not find any evidence of human rights considerations in US aid allocation to Africa. This finding supports the anecdotal evidences on the disregard of human rights in China's aid allocation. However, it contrasts with the sample of recipient countries situated in the rest of the world, where human rights considerations of China do not matter, and countries with poor PTS scores attract higher aid from the US. Looking at the sample

of all recipient countries across the world, we find that both China and the US are providing more aid to countries with low respect for human rights but measured on different scales. If China and the US want to appear less hypocritical about their aid allocations, then our analysis suggests that they need to consistently reward respect for human rights in their aid allocations by providing more aid to countries with a good record on both political/personal integrity rights and civil liberties.

The empirical results remain consistent when looking at the split between humanitarian and non-humanitarian aid and to some extent in countries whose human rights record is below some threshold level. The cross-sectional split between the periods of 2000-2004 and 2010-2014, however, provided stronger support for the US results worldwide.

All in all, our results support the general pessimism regarding China's aid, yet challenge the optimists who expect better targeted aid from the US. This is not to ignore the limitations of the present study. We lack detailed data for China's aid, especially on the channels through which it is providing aid. For instance, it might be the case that China is providing aid to poorly governed countries mainly through non-state actors (for example, private contractors, NGOs, public-private partnerships) in order to avoid human rights abusing governments yet addressing the economic needs of the country. The same could apply to the US aid allocations. Unless China becomes more transparent in its aid allocation criteria and release official data on its aid allocation, it is hard to understand its motivations behind aid allocation fully. In other words, since there are still large gaps in knowledge that need to be filled, it would be premature to make too many generalisations.

A.3. China's and US Total Aid Allocation (Excluding Outliers: Russia, Turkmenistan, Ecuador and Venezuela)

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and U.S. Total Aid (%)	**All Countries in Rest of Africa**		**All Countries across World**	
	US	**China**	**US**	**China**
	(49)	(50)	(51)	(52)
Political Terror Scale (ma)	-0.0062**	-0.00621	-0.0076***	-0.0047
Civil Liberties (ma)	-0.0051**	-0.0012	-0.013	-0.0042**
GDP per Capita (log, t-1)	-0.0136	0.0019	-0.0157*	0.0169
People Affected by Disaster (per 1000 people, log, t-1)	-0.0018*	0.0005	0.021	0.0025
Energy Depletion (log, t-1)	0.0017	0.002	0.0001	0.0032
Mineral Depletion (log, t-1)	0.001	0.0025	0.0009	0.0051
UNGA Voting Aff. with Donor (t-1)	0.0013***	0.0323**	0.0006	0.0197**
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0166**	0.0336**	0.0218***	0.0275**
Control of Corruption Index (ma)	-0.0005	0.0064**	-0.001	0.0039*
Aid from other traditional Donors (log, t-1)	0.0064***	-0.0021	0.0056***	-0.0006
N	940	892	1455	1399

Notes: Dependent variable is the share of recipient country in the total China's and U.S. aid respectively in a year *t*. Country and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1. Russia, Turkmenistan, Ecuador and Venezuela.

A.4. China's and US Total Aid Allocation to African Countries

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and U.S. Total Aid (%)	**Pooled Regression**		**Separate Regressions**	
	US	**China**	**US**	**China**
	(53)	(54)	(55)	(56)
Political Terror Scale (ma)	-0.0075**	0.0042	-0.0036	0.0146***
Civil Liberties (ma)	0.0015	-0.0078*	0.0004	-0.0129***
GDP per Capita (log, t-1)	-0.0264	0.0173	-0.0279	0.0058
People Affected by Disaster (per 1000 people, log, t-1)	0.0004	0.001	0.0003	0.0018*
Energy Depletion (log, t-1)	0.0025	0.0066**	0.0013	0.0076
Mineral Depletion (log, t-1)	0.0061*	-0.0009	0.0008	0.0012
UNGA Voting Aff. with Donor (t-1)	0.0001	0.0015	0.0008*	0.0069
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0113	0.001	0.0251**	-0.0148
Control of Corruption Index (ma)	-0.0036	-0.0009	-0.0018	-0.0011
Aid from other traditional Donors (log, t-1)	0.0044**	0.0006	0.0041***	-0.0005
N	1200	1200	568	557

Notes: Dependent variable in the pooled regression is the share of recipient country i in the total aid allocated by donor j in a year t. For separate regressions, dependent variable represents the respective share in China's and U.S. aid. Country and year-fixed effects are included in all the models. Intercept dummies for China and U.S. are included in pooled regression but not shown. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by donor-recipient pairs in pooled regression and be recipient countries in separate regressions. *** p<0.01, ** p<0.05, * p<0.1.

A.5.1. China's and US Total Aid Allocation to African Countries and Rest of the World

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and U.S. Total Aid (%)	**All African Countries**				**Rest of the World**			
	US (PTS)	**US (CL)**	**China (PTS)**	**China (CL)**	**US (PTS)**	**US (CL)**	**China (PTS)**	**China (CL)**
	(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64)
Political Terror Scale (ma)	-0.0036		0.0113**		-0.0046***		0.0042	
Civil Liberties (ma)		-0.0001		-0.0083		-0.0005		0.0022
GDP per Capita (log, t-1)	-0.0284	-0.0374*	-0.0228	0.0144	-0.0495*	-0.0404*	-0.0858	-0.0834
People Affected by Disaster (per 1000 people, log, t-1)	0.0003	0.0003	0.001	0.0013	-0.0007	-0.0008	-0.0013	-0.0015
Energy Depletion (log, t-1)	0.0013	0.0012	0.0022	0.0018	-0.0036	-0.0052	-0.0078	-0.0094
Mineral Depletion (log, t-1)	0.0007	0.001	0.0042	0.0013	0.0003	0.0005	0.0019	0.0021
UNGA Voting Aff. with Donor (t-1)	0.0007*	0.0008**	0.0033	0.0038	0.0021**	0.0022**	0.0239	0.0249
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0250**	0.0268**	0.1298***	0.1233***	-0.0155	-0.0169	0.0443	0.045
Control of Corruption Index (ma)	-0.0019	-0.0014	0.0156***	0.0107**	-0.0011	0.0008	0.0008	-0.0002
Aid from other traditional Donors (log, t-1)	0.0041***	0.0039***	0.0005	0.0011	0.0024	0.0021	-0.0036	-0.003
N	568	568	559	559	985	994	982	990

Notes: Dependent variable is the share of recipient country in the total China's and U.S. aid respectively in a year *t*. Country and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

A.5.2. China's and US Total Aid Allocation across World

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and U.S. Total Aid (%)	**All Countries in the World**			
	US (PTS)	**US (CL)**	**China (PTS)**	**China (CL)**
	(65)	(66)	(67)	(68)
Political Terror Scale (ma)	-0.0029		0.0048	
Civil Liberties (ma)		0.0011		-0.0021
GDP per Capita (log, t-1)	-0.0468**	-0.0459***	-0.0518	-0.0465
People Affected by Disaster (per 1000 people, log, t-1)	-0.0002	-0.0002	-0.00005	-0.0001
Energy Depletion (log, t-1)	0.0027	0.0018	-0.0007	-0.0009
Mineral Depletion (log, t-1)	0.0029***	0.0025***	0.0022	0.0016
UNGA Voting Aff. with Donor (t-1)	0.0015*	0.0018**	0.0095	0.0107
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0095	0.0094	0.0912**	0.0913**
Control of Corruption Index (ma)	-0.0005	0.001	0.0045	0.0023
Aid from other traditional Donors (log, t-1)	0.0032***	0.0028***	-0.0028	-0.0026
N	1553	1562	1541	1549

Notes: Dependent variable is the share of recipient country in the total China's and U.S. aid respectively in a year *t*. Country and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

A.5.3. China's and US Humanitarian Aid Allocation to African Countries and Rest of the World

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and U.S. Total Aid (%)	**All African Countries**				**Rest of the World**			
	US (PTS)	**US (CL)**	**China (PTS)**	**China (CL)**	**US (PTS)**	**US (CL)**	**China (PTS)**	**China (CL)**
	(69)	(70)	(71)	(72)	(73)	(74)	(75)	(76)
Political Terror Scale (ma)	-0.0011		-4.87E-06		-0.0003		0.0006***	
Civil Liberties (ma)		-0.0018***		0.00004		-0.0002		-0.0006**
GDP per Capita (log, t-1)	-0.031***	-0.0374***	0.0002	0.0002	-0.0219**	-0.021**	-0.0014	-0.0002
People Affected by Disaster (per 1000 people, log, t-1)	-0.00002	0.00004	-3.18E-06	-4.06E-06	-0.0001	-0.0001	0.00001	-6.99E-06
Energy Depletion (log, t-1)	0.0013***	0.0012***	4.71E-06	6.01E-06	-0.0004	-0.0003	0.0011	0.0001
Mineral Depletion (log, t-1)	0.0017***	0.0016***	0.0001***	0.0001***	0.0003	0.0003	0.0001	0.0001
UNGA Voting Aff. with Donor (t-1)	0.0004**	0.0003	-0.0001*	-0.0001**	0.0006**	0.0006**	-0.0002	-0.0003
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0082*	0.0075	-0.0001	-0.0001	-0.0062*	-0.0054	-0.0003	0.0019**
Control of Corruption Index (ma)	-0.0002	-0.0008	0.0001***	0.0001***	0.0003	0.0003	0.0005***	0.0003
Aid from other traditional Donors (log, t-1)	0.0007**	0.0008**	1.81E-07	-1.93E-06	0.0005	0.0005	-0.0003***	-0.0003**
N	568	568	559	559	985	994	982	990

Notes: Dependent variable is the share of recipient country in China's and U.S. humanitarian aid respectively in a year *t*. Country and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

A.5.4. China's and US Humanitarian Aid Allocation across World

(Fractional Logit, 2000-2014)

	All Countries in the World			
Dependent Variable: Recipients' Share in China's and U.S. Total Aid (%)	**US (PTS)**	**US (CL)**	**China (PTS)**	**China (CL)**
	(77)	(78)	(79)	(80)
Political Terror Scale (ma)	-0.0003		0.0004***	
Civil Liberties (ma)		-0.0010**		-0.0001
GDP per Capita (log, t-1)	-0.0249***	-0.0248***	-0.0015	-0.0009
People Affected by Disaster (per 1000 people, log, t-1)	-0.00003	-9.38E-06	3.10E-06	-5.54E-06
Energy Depletion (log, t-1)	0.0010*	0.0009*	0.0002*	0.0003
Mineral Depletion (log, t-1)	0.0011***	0.0010***	0.0002***	0.0002***
UNGA Voting Aff. with Donor (t-1)	0.0004***	0.0004**	-0.0004*	-0.0003
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0008	0.0008	0.0007	0.0011*
Control of Corruption Index (ma)	0.0004	0.0001	0.0004***	0.0003**
Aid from other traditional Donors (log, t-1)	0.0005	0.0005	-0.0001**	-0.0001

N	1553	1562	1541	1549

Notes: Dependent variable is the share of recipient country in China's and U.S. humanitarian aid respectively in a year *t*. Country and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

A.5.5. China's and US Non-Humanitarian Aid Allocation to African Countries and Rest of the World

(Fractional Logit, 2000-2014)

Dependent Variable: Recipients' Share in China's and U.S. Total Aid (%)	**All African Countries**				**Rest of the World**			
	US (PTS)	**US (CL)**	**China (PTS)**	**China (CL)**	**US (PTS)**	**US (CL)**	**China (PTS)**	**China (CL)**
	(81)	(82)	(83)	(84)	(85)	(86)	(87)	(88)
Political Terror Scale (ma)	-0.0016		0.0113**		-0.0043***		0.0033	
Civil Liberties (ma)		0.0019		-0.0084		-0.0005		0.0024
GDP per Capita (log, t-1)	0.0287	0.0263	-0.0227	0.0146	-0.0269	-0.0197	-0.0874	-0.086
People Affected by Disaster (per 1000 people, log, t-1)	0.0004	0.0004	0.001	0.0013	-0.0006	-0.0007	-0.0014	-0.0015
Energy Depletion (log, t-1)	0.0001	0.0001	0.0022	0.0018	-0.0028	-0.005*	-0.0079	-0.0094
Mineral Depletion (log, t-1)	-0.0006	-0.0003	0.0042	0.0013	-0.0001	0.0002	0.0018	0.0019
UNGA Voting Aff. with Donor (t-1)	0.0005	0.0006	0.0036	0.0041	0.0016*	0.0018*	0.0243	0.0255
Total Trade with Donor (% of Recipient's GDP, t-1)	0.0198	0.0201	0.1297***	0.1232***	-0.0073	-0.0122	0.0438	0.0431
Control of Corruption Index (ma)	-0.0003	0.00003	0.0155***	0.0106**	-0.0012	0.0007	0.0006	-0.0001

Aid from other traditional Donors (log, t-1)	0.0034**	0.0034**	0.0005	0.0011	0.0017	0.0017*	-0.0033	-0.0028
N	568	568	559	559	985	994	982	990

Notes: Dependent variable is the share of recipient country in China's and U.S. non-humanitarian aid respectively in a year *t*. Country and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

A.5.6. China's and US Non-Humanitarian Aid Allocation across World

(Fractional Logit, 2000-2014)

	All Countries in the World			
Dependent Variable: Recipients' Share in China's and U.S. Total Aid (%)	**US (PTS)**	**US (CL)**	**China (PTS)**	**China (CL)**
	(89)	(90)	(91)	(92)
Political Terror Scale (ma)	-0.0025		0.0043	
Civil Liberties (ma)		0.0024		-0.002
GDP per Capita (log, t-1)	-0.018	-0.0185	-0.0519	-0.0472
People Affected by Disaster (per 1000 people, log, t-1)	-0.0001	-0.0002	-.00004	-0.0001
Energy Depletion (log, t-1)	0.0016	0.0008	-0.0008	-0.001
Mineral Depletion (log, t-1)	0.0017*	0.0016*	0.0021	0.0015
UNGA Voting Aff. with Donor (t-1)	0.001	0.0013*	0.0098	0.0109

Total Trade with Donor (% of Recipient's GDP, t-1)	0.0078	0.0064	0.0905**	0.0904**
Control of Corruption Index (ma)	-0.0006	0.0009	0.0043	0.0023
Aid from other traditional Donors (log, t-1)	0.0027***	0.0024**	-0.0026	-0.0024
N	1553	1562	1541	1549

Notes: Dependent variable is the share of recipient country in China's and U.S. non-humanitarian aid respectively in a year *t*. Country and year-fixed effects are included in all the models. PTS is measured on a scale of 1 to 5 and CL is measured on a scale of 1 to 7 (from low to high respect for human rights). Standard errors clustered by recipient countries. *** p<0.01, ** p<0.05, * p<0.1.

Chapter 3: The Impact of China's Aid on Trading Behaviour of Developing Countries

3.1. Introduction

The link between trade and foreign aid has generated substantial academic interest over the years, and it has been analysed in several different contexts (Cadot et al., 2014). In general, the existing literature points towards a positive relationship between traditional donors' aid and their exports to recipient countries. While there has been much research on the aid and trade relationship for traditional donors, there has been very little work on the potential trade enhancing impacts of China's aid.

China has emerged as a key player in the international aid market, providing a significant amount of aid to developing countries in Asia, Latin America and especially in Africa. The establishment of the Asian Infrastructure Investment Bank (AIIB) and the 'One Belt One Road' (OBOR) initiative are some excellent examples of China's focus on providing trade-related aid. While no official figures of China's trade-related aid exist, the Chinese government has reported at the World Trade Organization's second high-level Global Review of Aid for Trade in 2009 that "China's Aid for Trade increased by 20% and 30% in 2007 and 2008 respectively, compared with the 2002-2005 period" (WTO, 2009: 76).

China is often accused of having commercial motivations for offering aid, i.e. that the primary motive is to secure export orders (Pehnelt, 2007). Similarly, several studies assert that China's aid to Africa is motivated by gaining access to Africa's natural resources and for trade and investment (Ajakaiye, 2006; Taylor, 2009). However, these

critics provide little empirical evidence to support these claims. The empirical analysis of China's aid and its trade relationship with the recipient countries can, therefore, serve as an interesting case study for learning about the trade-related impact and motivations behind China's aid.

To the best of our knowledge, there are only two recent studies which have evaluated the impact of China's aid on recipients' trade within Africa (Lemi, 2017 and Liu and Tang, 2018). Lemi (2017) compared the trade effects of China's aid with OECD donors. He found that, in contrast with OECD donors, there is no significant impact of China's aid on both imports and exports from recipients for the 2002-2012 period (Lemi, 2017). More recently, Liu and Tang (2018) compared the trade implications of China's aid with that of U.S. The findings reveal that both the U.S. and China's aid have a positive impact on their exports to recipients. On the other hand, no robust effect was found for China's and U.S.'s aid on their imports from recipients (Liu and Tang, 2018).

This chapter contributes to the existing literature by extending the analysis of China's aid on trade beyond Africa to the entire pool of developing countries. Moreover, earlier studies have mainly focused on the bilateral effects of aid on recipients' exports/imports from donors. In contrast, we investigate the overall effect of China's aid on recipients' exports and imports from not only by China but also the rest of the world. Aid may predominantly affect recipients' trade with its bordering countries and not necessarily recipients' trade with the donor. If foreign aid is effective in strengthening the export capacity of the recipient country (that is, total exports increase as a result of receiving aid), this would be progressive from a development perspective,

irrespective of the effects on bilateral trade between China and the recipient. As a second step, we evaluate the bilateral effects of aid by analysing China's exports and imports from recipient countries.

The chapter proceeds as follows. Section 2 discusses the potential transmission channels through which aid leads to trade. Section 3 summarises the empirical literature on China's aid, and Section 4 discusses research aims. Section 5 provides an overview of China's aid. In Section 6, we set out our empirical methodology. It is followed by a summary of our preferred estimator in Section 7. Finally, Section 8 presents the results and Section 9 concludes the chapter.

3.2. Potential Transmission Channels through which Aid Leads to Trade

Over the years, the link between trade and foreign aid has generated substantial academic interest, and there has been a general consensus in the literature that foreign aid leads to trade (Martínez-Zarzoso et al., 2014; Pettersson & Johansson, 2013; Wagner, 2003). There are several direct and indirect transmission channels through which foreign aid is expected to enhance trade. These key channels are described as follows:

3.2.1. Income Effect

The first channel focuses on the macroeconomic mechanism through which aid increases recipients' imports. Aid purely given as money in the form of cash transfer tends to increase recipients' disposable gross national income. This increase in

disposable income should allow the recipient country to dispose of a higher financial capacity to import goods from the donor as well as the rest of the world (Temple and Van de Sijpe, 2017).

3.2.2. Aid towards Infrastructure and Production Sector

The second channel focuses on trade-related aid, which explicitly aims at financing economic infrastructure, which includes transportation, telecommunication, and energy supply. Its objective is to help recipient countries in removing key infrastructure bottlenecks, thereby reducing trade costs. Some studies have found empirical evidence that aid focused on economic infrastructure reduces the costs of trading and provides an important stimulus to recipient exports (Calì & TeVelde, 2011; Busse et al., 2011; Vijil & Wagner, 2012). It should also be noted that donor exports, too, could be promoted by better infrastructure.

Another relevant category of trade-related aid focuses on the production sector. It covers aid for sectoral development in the field of banking and financial services, agriculture, forestry, fishing, industry, mineral resources and mining, construction, and tourism. Aid focused on the production sector potentially helps recipient countries in enhancing their production capacity and promoting competitiveness. Consequently, it is expected to increase recipients' trade with the donor as well as the rest of the world.

3.2.3. Goodwill

The third channel establishes an indirect link between aid and trade by arguing that a long-term aid relationship generates goodwill for the donor, such that the recipient

country may feel morally obliged to buy goods from the donor so as to secure the continuity of the aid flow (Lloyd et al., 2000; Wagner, 2003). Djajić et al., (2004) suggest that in the presence of goodwill effects, aid may shift recipients' preferences in favour of the donor's future exporting goods.

3.2.4. Tied Aid

Lastly, the most conventional channel is 'Tied aid' which refers to aid provided on the conditions that goods and services to be used in the aid financed projects are purchased from the donor. In order to receive the aid, the recipient country has to fulfil the condition imposed by the donor. A less visible form of aid tying occurs when a donor chooses to fund projects that require supplies from industries in which the donor has a strong competitive advantage (Wagner, 2003). It is therefore argued that donors may use aid as a tool to promote their exports to recipient countries.

It is important to mention at the outset that the effectiveness of the above transmission channels is dependent on the economic performance of a country. It is also mediated by domestic policymakers, implementation agencies, and other socio-economic conditions prevailing in a country. It is therefore difficult to quantify the individual impact of any transmission channel on trade flows.

3.3 Review of Empirical Literature on Aid for Trade

A sizable empirical literature has shown that foreign aid stimulates bilateral trade between donors and recipients, with effects varying by the donor and over time. This section summarises 13 key studies that have empirically analysed the aid-trade link. It includes aid and trade flows for five traditional donors (the U.S., Germany,

Switzerland, Denmark; DAC donors as a whole), and the relatively new donor, i.e., China. Only results relating to the link between aid and trade are shown (see Table 3.1, columns 6 and 7). In the majority of the studies, the two variables were found to be significantly correlated after controlling for the impact of other explanatory variables on trade (Wagner, 2003; Zarin-Nejadan et al., 2008; Nowak-Lehmann et al., 2009) while in others only partial evidence is found (e.g. Cali and Te Velde, 2011; Vijil and Wagner, 2012; Martínez-Zarzoso, 2017). One exception is Osei et al. (2004) which cast doubt on whether aid impacts exports and concluded that aid had no significant influence on trade between donors and recipients.

The studies reviewed in Table 3.1 evaluated the impact of foreign aid on total merchandise exports from either a single donor or from a group of countries. For instance, one set of studies (Wagner, 2003; and Petterson and Johansson, 2013) measure the influence of aid on bilateral trade for groups of donors. Whereas, the other set of studies measure the influence for single donor countries. Examples of single-donor studies are those by Zarin-Nejadan et al., (2008); Martinez-Zarzoso et al., (2009); Novwak-Lehmann et al., (2009) for Germany and Liu and Tang (2018) for China and the U.S.

The majority of empirical studies used the gravity model of trade to evaluate aid leading to trade hypothesis. Aid flows were first introduced into the gravity model of trade by Nilsson (1997). His idea was to analyse the impact of aid provided by the European Union (EU) donors on their exports for the period 1975-92. The study used a common intercept for all the EU countries, three-year averages, and a time trend.

According to their findings, $1 of EU aid generates $2.6 of exports from donors to recipients. However, the study used pooled data, and the results may be misleading if the nature of the aid-trade links differs for donor-recipient pairs within the sample.

Nilsson's approach was extended by Wagner (2003) for evaluating aid given by OECD donors to 109 recipient countries for the years 1970 to 1990. The study also compared Japan, which has been heavily criticised for using its aid as a tool to promote its exports, with other donors and found that it derives no more unfair trade advantages from aid than the average donor. The estimated average return on aid according to the pooled OLS was found to be $2.29 i.e., $1 of aid generates $2.29 of exports from donors to recipients. This finding provided additional support to Nilsson's estimates. However, when fixed country effects were added, the average return on donors' aid was reduced to $0.73.

On the other hand, Pettersson and Johansson (2013) and Nowak-Lehman et al., (2013), among others, investigated the effect of aid on recipient exports. Pettersson and Johansson (2013) found a significant positive effect of aid on recipient exports. Whereas, Nowak-Lehman et al., (2013) concluded that the long-term impact of bilateral aid on recipients' exports is not statistically significant.

While there has been much research on the aid and trade relationship for traditional DAC donors (reviewed in Table 3.1), there has been very little work on the aid leading to trade hypothesis for China. Two recent examples are Lemi (2017) and Liu and Tang (2018), which have evaluated the links between China's aid to African countries. Both studies have employed the gravity model to estimate China's aid to Africa using the

data from AidData. Another similarity between the two studies is the comparison of China's aid with traditional donors, i.e., Lemi (2017) has compared China's aid to OECD donors, and Liu and Tang (2018) compared it with the U.S.

More specifically, Lemi (2017) compared China's aid to OECD donors for the 2002-2012 period. The study used Generalized Least Squares (GLS) to account for potential heteroscedasticity which might arise due to diversity across African countries.[34] The study disaggregated imports and exports by commodity groups into raw materials, capital goods and intermediate goods. The study found that, in contrast with OECD donors, China's aid to Africa has played little role in Africa's bilateral trade with China. No significant impact of China's aid was found on both imports and exports of most commodity groups.

In contrast, Liu and Tang (2018) used pooled OLS as a first step to investigate the aid-trade relationship for the 2003-2012 period. As a next step, they estimate the model using fixed-effects with a separate intercept for each individual to control for potential unobserved individual heterogeneity that is constant over time. Unlike Lemi (2017), the study did not use GLS estimator and claimed that "it is biased and inconsistent when the unobserved individual effects are correlated with explanatory variables". As concerns the lagged effect of bilateral trade data, the study uses the first-differenced GMM model. The key conclusion of this study is that, in contrast to the US, China's aid shows a positive impact on the China-Africa bilateral trade. While both China's

[34] GLS estimator takes into account the dependence of the error term within an individual over time by weighting the observations based on a consistent estimate of the variance-covariance matrix.

and the US aid have a positive effect on their exports to African countries. Whereas, a positive effect on imports from African recipients is only found in the case of China.

Building upon this literature, the study aims to extend the analysis of China's aid and trade beyond Africa to the entire pool of developing countries. Earlier studies have mainly focused on bilateral effects of aid on recipients' exports/imports from donors. In contrast, we will also investigate the overall effect of China's aid on recipients' exports and imports from the rest of the world since it is of the greatest importance for development.

Table 3.1: Literature Survey on Aid Leading to Trade Hypothesis–Summary

Study	Countries and Period	Estimator	Dependent Variable	Key Explanatory Variable	Does Aid Increase Donors' Exports to Recipients?	Does Aid Increase Donors' Imports from Recipients?
Nilsson (1997)	EU-15 donors to 108 recipients, 1975–1992	OLS	Log of donors' exports to recipients	Log of aid	✓	
Wagner (2003)	20 donors to 109 recipients, 1970 to 1992	Fixed-effects estimator	Log of donors' exports to recipients	Log of aid	✓	
Osei et al. (2004)	4 European donors and 26 African recipients, 1969 to 1995	Fixed-effects estimator, GLS	Recipients' total imports from donor	Total amount of aid; Share of a recipient's aid from a donor	✗	
Zarin-Nejadan et al. (2008)	Switzerland to 100 recipients, 1965 to 2004	Fixed-effects estimator, First-Difference Estimator	Log of donors' exports to recipients	Log of ODA	✓	
Nowak-Lehmann et al.(2009)	Germany to 77 recipients, 1962 to 2005	Dynamic OLS	Log of donors' exports to recipients	Log of ODA	✓	
Martínez-Zarzoso et al. (2009)	Germany to 138 recipients, 2001 to 2005	Fixed-effects estimator, Dynamic GMM	Log of donors' exports to recipients	Total aid in current USD	✓	
Cali and Te Velde (2011)	DAC donors to 100 recipients, 2002 to 2007	Fixed-effects estimator, GMM	Log of donors' exports to recipients	Log of aid for trade facilitation	✓ for aid to economic	

					infrastructure ✗ for aid to production sector	
Vijil and Wagner (2012)	DAC donors to recipients, 2002 to 2008	OLS, 2SLS	Log of exports over GDP ratio	Log of aid for infrastructure	✓ for aid to economic infrastructure	
Pettersson and Johansson (2013)	DAC donors to 180 recipients, 1990 to 2005	OLS, Heckman Selection Model	Log of exports in both direction	Log of aid	✓	✓
Martínez-Zarzoso (2017)	DAC donors to 162 recipients, 2002 to 2011	Fixed-effects estimator, Dynamic GMM, Quantile Regression	Log of donors' exports to recipients	Log of aid to trade related sectors	✓ for countries with a level of exports above the 0.35 quantile.	
Lemi (2017)	China and OECD donors to African recipients, 2002 to 2012	GLS	Log of recipients' imports from and exports to donors	Log of OECD donors' sectoral aid for trade Log of China's sectoral aid to trade related sectors	✓ for OECD donors **na** for China	✓ for OECD donors **na** for China
Liu and Tang (2018)	China and U.S. to African recipients, 2002 to 2012	Fixed-effects estimator, First-differenced GMM	log of donors' exports; log of donors' imports; log of total trade	Log of ODA	✓	✓ for China only
Martinez-Zarzoso, (2019)	33 donors to 125 recipients, 1995 to 2016	Control function approach	Log of donors' exports to recipients	Log of aid	✓	**na**

Notes: ✓ represents expected and significant result; **na** represents insignificant result.

3.4. Research Aims

The chapter aims to evaluate the impact of China's aid on recipients' overall export and import volume. As discussed in Section 2, foreign aid could enhance recipients' trade through several transmission channels.[35] These include: 1) the effect of an increase in income; 2) aid directed towards infrastructure and production sectors; 3) good-will effects; and 4) tied aid. Considering the first two transmission channels together, we expect China's aid to positively influence recipients' exports and imports to the rest of the world. For example, aid given in the form of cash transfer increases recipients' disposable income, and consequently, their capacity to import foreign goods. Moreover, trade-related aid in infrastructure could facilitate recipients' trade by removing key infrastructure bottlenecks, thereby reducing trade costs. Whereas, trade-related aid in production sector may help recipient countries in enhancing their productive capacity and competitiveness (Calì & Te Velde, 2011; Busse et al., 2011; Vijil & Wagner, 2012). Given this background, we aim to investigate the following hypotheses:

Question I: *Does China's aid increases recipients' overall exports?*

Question II: *Does China's aid increases recipients' overall imports?*

[35] Note that we are interested in evaluating the overall impact of aid on trade rather than analysing the individual impact of transmission channels.

We are further interested in analysing the bilateral effects of China's aid on recipients' trade with China. The idea is to analyse whether China's aid increases recipients' exports and imports from China as compared to the rest of the world. The last two channels i.e., good-will effects and tied aid, are expected to foster trade between donors and recipients at the bilateral level. For instance, Martínez-Zarzoso et al., (2009) argued that aid may shift preferences of recipients in favour of the donor's exporting goods as a gesture of good-will. Moreover, donors may impose conditions that goods to be used in the aid projects are purchased from the donor (Wagner, 2003). The literature suggests that "China's aid agreements usually stipulate that at least 50% of equipment, materials, and technology needed for aid projects should be sourced from China" (Nissanke and Söderberg, 2011, p.27). Thus, the aid itself may directly promote China's exports to recipient countries. Furthermore, some studies have specifically criticised China's aid to Africa by arguing that China's aid programmes are motivated by gaining access to natural resources from recipient countries (Ajakaiye, 2006; Brookes & Shin, 2006; Pehnelt, 2007; Taylor, 2009). If these claims related to tied aid and good-will effects are valid, recipient countries are expected to export and import more from China as compared to the rest of the world. The idea is similar to 'trade-diversion' where a country diverts its trade away from a competitive country towards one with a regional trading agreement.

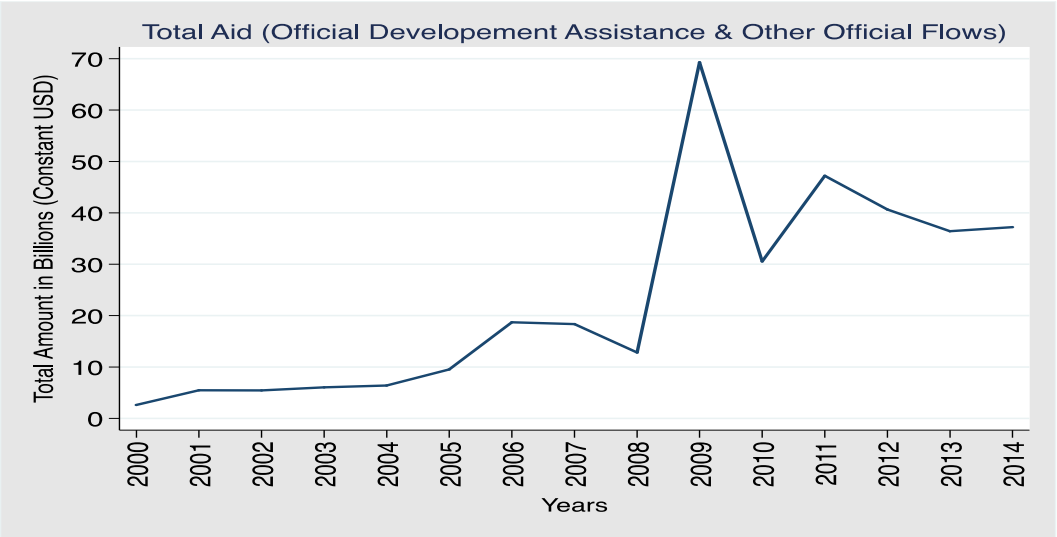
Question III: *Is there evidence to support claims that China's provision of foreign aid is motivated by China's self-interest which shows up in bilateral trade flows?*

3.5. An Overview of China's Aid Statistics

The chapter uses the most recent version of the AidData's Global Chinese Official Finance Dataset, Version 1.0, to measure China's aid. Our definition of aid includes both Official Development Assistance (ODA) and Other Official Flows (OOF)[36]. Figure 3.1 shows the time-series trend of China's aid flows. China disbursed around 2 billion USD in the year 2000. During the first 5-year period, China gradually started to expand its aid spending. After a slow start, China's aid steadily increased and reached its peak in the year 2009 at around 70 billion USD. This was the year when China's Development Bank (CDB) offered long term loans to national energy companies and government entities in Russia, Turkmenistan, Ecuador and Venezuela (Downs, 2011). CDB has lent Russian oil companies alone 35 billion USD in return for future oil supplies (Downs, 2011). While China's aid spending declined after 2009, it continued to give more aid than U.S. over the last 5-year period, ranging between 30 to 45 billion USD per year.

[36] ODA comprise of grants or loans undertaken by the official sector with the aim of promoting welfare and development and has a concessional grant element of 25% or more. OOF comprise of export financing and other commercial activities that promote the donor countries economic interests; or developmental loans that are not concessional enough to be considered as ODA.

Figure 3.8:Trend of China's Total Aid (World, 2000-2014)



Data Source: AidData. Figures are reported in constant 2014 USD.

Using the information on the sectors of the aid projects, Figure 3.2 presents the sectoral aid allocation of China's aid to recipient countries from 2000 to 2014. China financed a total of 4325 aid projects between 2000 and 2014 for a total amount of 352 billion constant USD. When looking at the total amount of aid allocated to each sector, economic infrastructure projects dominated China's aid. The top three sectors are energy generation and supply (134 billion USD), transport and storage (86 billion USD), industry, mining and construction (30 billion USD) (see Figure 3.2).

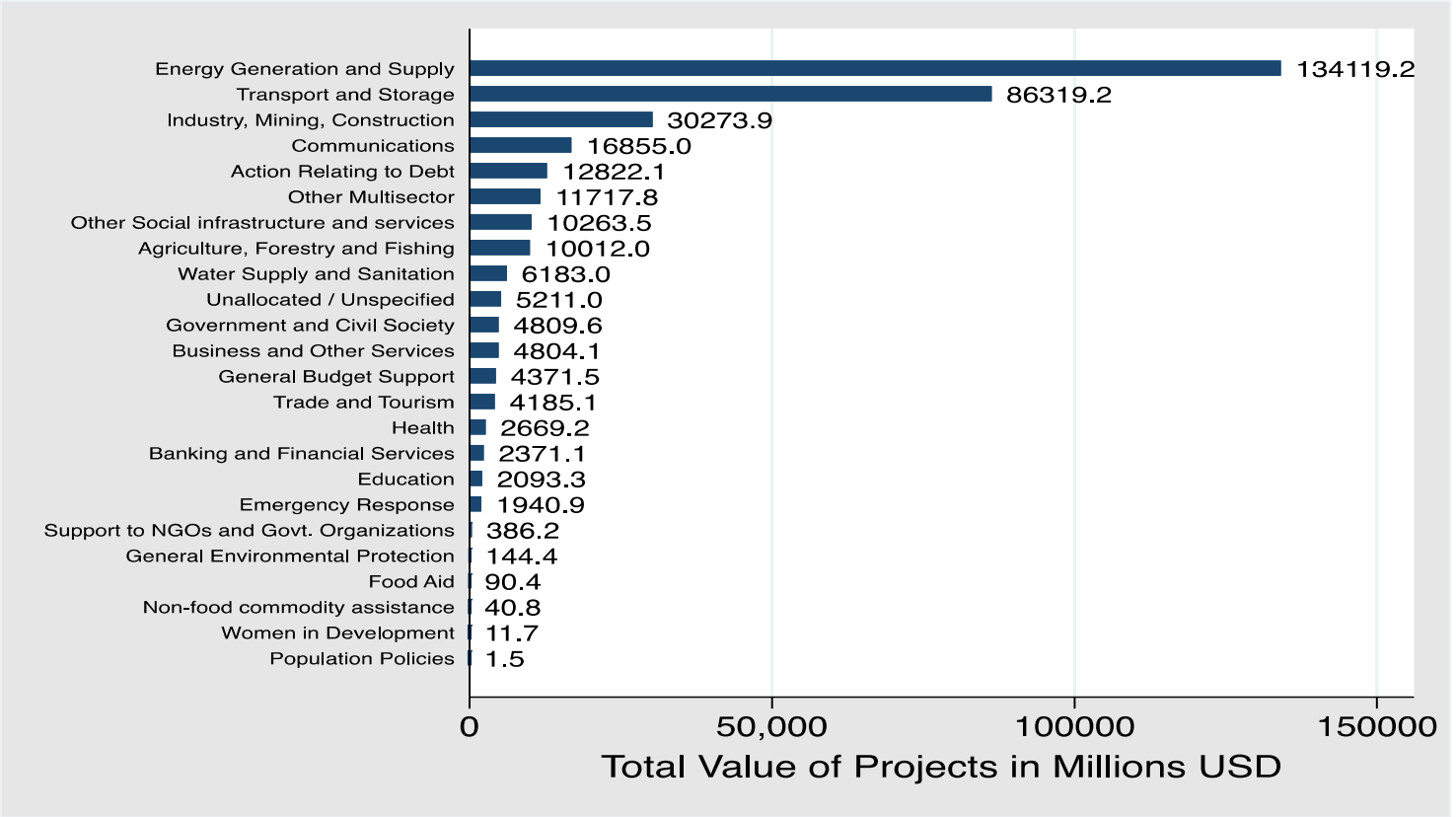
As discussed above, within the energy generation and supply sector, CDB offered enormous long-term loans to national energy companies and government entities in Russia, Turkmenistan, Ecuador and Venezuela. Another focus was on the construction of large hydropower schemes and thermal generation and transmission. Angola, Ethiopia, Sudan, Nigeria, and Zambia each received more than 2 billion USD for energy projects.

China's aid projects in the transport and storage sector include construction and renovation of roads, railways, harbours and airports. Most of the funding in this sector has gone towards the railway networks. South Africa received more than 5 billion USD for transportation and storage projects alone during the 2000-2014 period. Other large deals have been in Nigeria, Gabon, and Mauritania.

Another important aspect of China's aid is the promotion of agricultural development. The White Paper published by the Chinese government in 2014 states that "From 2010 to 2012, China assisted 49 agricultural projects, dispatched over 1,000 agricultural experts to recipient countries, and provided them with a great quantity of machinery, improved varieties of grain, fertilizers and other agricultural materials" (State Council, 2014).

At the bottom of the list are sectors including population policies, women in development, food/noon-food commodity aid and environmental protection. Other important aid sectors at the top priority of traditional donors i.e., health and education, fell low on China's list.

Figure 3.9: Sectoral Allocation of China's Aid by Total Value of Projects, 2000-2014



Data Source: AidData

3.6. Methodology

Turning to empirics, the chapter employs the commonly used gravity model of trade to estimate bilateral trade flows (Anderson 2011). The model anticipates that "trade will be higher in absolute terms; the greater are the economic masses, and the closer together are the two economies". In relative terms, the model also predicts that as "economic masses increase, trade decreases as a proportion of these masses" (Battersby, 2005, p.4).

The traditional naïve estimation of the log-linearised gravity regression is specified as follows:

$$LnTrade_{ijt} = \alpha_0 + \alpha_1 LnGDP_{it} + \alpha_2 LnGDP_{jt} + \alpha_3 LnDist_{ij} + \alpha_4 Comm\_Lang_{ij} + \alpha_5 Colonial\_link_{ij} + \alpha_6 Contiguity_{ij} + \alpha_7 RTA_{ij} + \mu_{ijt} \quad (1)$$

Where $LnTrade_{ijt}$ represents (logged) trade between two countries *i* and *j* in year *t*. $LnGDP_i$ and $LnGDP_j$ represent a measure of economic sizes of the two countries, $LnDist_{ij}$ measures the (logged) geographical distance between the two countries, the rest of the bilateral variables are dummies representing factors impeding or facilitating trade, i.e., common language, colonial links, contiguity, and regional free trading agreements.

Nilsson (1997) first introduced aid flows into the gravity trade model in order to analyse the impact of aid on trade. The specification assumes that aid magnifies trade, either by reducing barriers to trade with all the trading partners, or by upwardly biasing trade between the donor and the recipient. The basis of this inclusion is that trade-

related aid could potentially be an important factor influencing trade flows (see Section 2 for a detailed explanation of potential transmission channels through which aid could promote trade).

Following Nilsson (1997), we add (logged) China's total aid provided to a recipient country (*LnChina_Aid)* in the gravity model. The idea is to investigate how China's aid has benefited recipient countries' exports and imports to partner countries. Note that our definition of China's aid includes both ODA and OOF. This is because both forms of could aid include financing targeted towards trade promotion. For instance, aid directed at infrastructure and production sector could have both development and commercial motives. It can, therefore, be disbursed as either ODA or OOF, the only key difference is the level of grant element.

Our sample includes 134 developing countries eligible to receive aid based on their income status. It includes all low-income, lower-middle income, and middle-income countries. We separately analyse their imports and exports to all 200 partner countries in the world (including high-income countries) for the 2003-2014 period. The subscripts *i* represents the recipient country; *j* represents partner country, and *t* represents year. We further include a control variable $LnAggDAC\_Aid$ to account for the impact of aggregate aid provided by bilateral DAC donors and multilateral donors to a recipient country.

$$LnExports_{ijt} = \alpha_0 + \alpha_1 LnGDP_{it} + \alpha_2 LnGDP_{jt} + \alpha_3 LnDist_{ij}\ \alpha_4 Comm\_Lang_{ij} + \alpha_5 Colonial\_link_{ij} + \alpha_6 Contiguity_{ij} + \alpha_7 RTA_{ij} + \alpha_8 LnChina\_Aid_{i(n-3)} + \alpha_9 LnAggDAC\_Aid_{i(n-3)} + \mu_{ijt} \qquad (2)$$

$$LnImports_{ijt} = \alpha_0 + \alpha_1 LnGDP_{it} + \alpha_2 LnGDP_{jt} + \alpha_3 LnDist_{ij}\ \alpha_4 Comm\_Lang_{ij} + \alpha_5 Colonial\_link_{ij} + \alpha_6 Contiguity_{ij} + \alpha_7 RTA_{ij} + \alpha_8 LnChina\_Aid_{i(n-3)} + \alpha_9 LnAggDAC\_Aid_{i(n-3)} + \mu_{ijt} \quad (3)$$

Note that aid flows may take some time to have an impact on exports and imports. For example, infrastructure as well as production capacities have to be built and improved. If the argument is that China chooses to fund aid projects that require supplies from industries in which China has a competitive advantage, these projects will take some time to mature. If the effect of aid is coming through income, aid resources will be converted to imports with a time lag. The same can be said about the recipient's exposure to goods produced by the donor. It implies that we should look for the impact of cumulative aid in the past years. The variable $LnChina\_Aid_{i(n-3)}$ therefore, reflects (logged) cumulative China's aid received by a recipient country in the last 3 years i.e., (*China_Aid*t–1 + *China_Aid*t–2 + *China_Aid*t–3). In other words, the first data point on China's aid in 2003 shows the cumulative aid for 2000-2002 and the final in 2014 shows the cumulative aid for 2011-2013. Subscript *T-3,* therefore*,* represents cumulative aid in the previous three years. The same procedure is repeated for the aid provided by other donors. In the sensitivity analysis, we will also test for the instantaneous effects of aid on trade in the same year and for up to 5-year lagged effects.

An important development in the empirical literature on the gravity model is Anderson and van Wincoop's (2003) study. They established that "for trade between country pairs, it is the relative resistance that is of importance, that is, the resistance to trade between the country pair in relation to the resistance to trade between these countries

and other potential trading partners (so-called multilateral resistance)" (Anderson and van Wincoop, 2003). For example, trade between Kenya and Angola depends on how costly it is for each to trade with the other relative to the trading cost with other partner countries. Thus, a decline in the bilateral trade barrier between Kenya and a third country such as Burundi would reduce Kenya's multilateral trade resistance. It may lead to a diversion of bilateral trade away from Kenya-Angola towards Kenya-Burundi. Therefore, one should preferably account for multilateral resistance to proxy for the existence of unobserved trade barriers in order to estimate "structural" (theoretically grounded) gravity model.

A common approach to control for MRT is to include country-pair; country *i*-time and country *j*-time fixed effects (Yotov et al., 2016). Country-pair fixed effects (ω_{ij}) will control for all observable and unobservable time-invariant trade costs. In this case, the constant (α_0) is replaced by a country-pair specific intercept, α_{ij}. With the inclusion of country-pair fixed effects, bilateral time-invariant variables are no longer estimable because of perfect collinearity. On the other hand, recipient country i and partner country j time-varying individual effects will capture all country-specific characteristics which may vary over time, for example, change in the geographical composition of a country's trade. Note, however, that in our case, we can only control for partner country *j*-time fixed-effects (δ_{jt}) as recipient country *i*-time fixed effects are perfectly colinear with the time-varying aid variable. Also note that the GDP of the partner country is no more estimable with the inclusion of *j*-time fixed effects. The empirical equation now looks like:

$$LnExports_{ijt} = \alpha_{ij} + \alpha_1 LnGDP_{it} + \alpha_2 LnChina\_Aid_{i(n-3)} + \alpha_3 LnAggDAC\_Aid_{i(n-3)} + \omega_{ij} + \delta_{jt} + \mu_{ijt} \quad (4)$$

$$LnImports_{ijt} = \alpha_{ij} + \alpha_1 LnGDP_{it} + \alpha_2 LnChina\_Aid_{i(n-3)} + \alpha_3 LnAggDAC\_Aid_{i(n-3)} + \omega_{ij} + \delta_{jt} + \mu_{ijt} \quad (5)$$

In contrast with analysing the bilateral effects, so far, we have focused on evaluating the overall effects of China's aid on recipients' total export and import volume. Beyond the analytical reasons given in the introduction, there are two problems with estimating the bilateral effects. First, we cannot include the MRT term capturing partner-time fixed effects if we are restricting our sample to recipients' exports and imports from China. In this case, partner country-time fixed effects will be perfectly collinear with year fixed effects. Second, the restricted sample may lead to sample selection bias due to non-random sampling. Majority of the studies have not taken these problems into account and estimated the model for bilateral trade between donors and recipients. The results are likely to suffer from sample selection bias.

In order to overcome the two problems, we introduced a dummy variable which takes the value of one if a country is exporting/importing from China and zero otherwise and interacted it with the aid variable. A significant coefficient on this interaction term will indicate whether a developing country is exporting/importing more from China as compared to the rest of the world. Our model now looks like:

$$LnExports_{ijt} = \alpha_{ij} + \alpha_1 LnGDP_{it} + \alpha_2 LnChina\_Aid_{i(n-3)} + \alpha_3 ChinaDummy * LnChina\_Aid_{i(n-3)} + \alpha_4 LnAgg\_DAC\_Aid_{i(n3)} + \omega_{ij} + \delta_{jt} + \mu_{ijt} \quad (6)$$

$$LnImports_{ijt} = \alpha_{ij} + \alpha_1 LnGDP_{it} + \alpha_2 LnChina\_Aid_{i(n-3)} + \alpha_3 ChinaDummy * LnChina\_Aid_{i(n-3)} + \alpha_4 LnAgg\_DAC\_Aid_{i(n3)} + \omega_{ij} + \delta_{jt} + \mu_{ijt} \quad (7)$$

3.6.1. Data Sources

The data on trade flows have been taken from United Nations Commodity Trade Statistics Database (UN Comtrade). The data on China's and DAC aid are obtained from AidData and International and Development Statistics – OECD database respectively. Finally, distance, language, colonial link, contiguity and RTA data are obtained from the Centre D'Etudes Prospectives Et D'Informations Internacionales (CEPII). Trade, aid and GDP figures are reported in constant 2014 USD. Table 3.2 presents the summary statistics of all variables.

Table 3.2: Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Exports in Constant USD	420,673	90492.5	1513767	0	295237376
Imports in Constant USD	420,673	85793.59	1174567	0	195532064
GDP_Origin (log)	355,685	9.389354	2.142375	2.956519	14.72244
GDP_Destination (log)	311,079	10.09663	2.440518	2.956519	16.70792
Distance (log)	368,173	8.83708	0.733841	4.303624	9.892548
Contiguity (dummy)	368,173	0.014971	0.121438	0	1
Common language (dummy)	368,173	0.17849	0.382925	0	1
Colonial relationship (dummy)	368,173	0.003884	0.062201	0	1
Trading Agreement (dummy)	368,173	0.063715	0.244244	0	1
China's Aid (log, T-3)	420,673	3.023452	2.725178	0	10.1717
Agg. Aid by other Donors (log, T-3)	374,736	6.068609	1.53335	1.49812	9.925237

3.7. Estimator

One challenge in estimating the gravity model is the nature of data on trade flows. Very small and distant countries do no trade with each other, i.e. the trade flows are zero for a large number of cases. Helpman et al., (2008) reported that zero trade due to country pairs not trading with each other or having only one-directional trade account for about half the observations (Helpman, Melitz, & Rubinstein, 2008). Given the presence of many zeros, estimating the unknown parameters through Ordinary Least Squares (OLS) would result in coefficients biased toward zero, understating the impact of each variable. On the other hand, the elimination of zero aid flows will not

solve the problem and may lead to sample selection bias when zeros are not randomly distributed (Westerlund and Wilhelmsson, 2009).

In order to deal with the prevalence of zeros, alternatives to OLS are needed. One alternative approach is to treat the dependent variable as count data and to rely on the Poisson family of models by using a Poisson Pseudo Maximum Likelihood (PPML) estimator. PPML can be used both with count data and with a continuous dependent variable (Silva and Tenreyro, 2006) and the latter approach is popular in the international trade literature. Shepherd (2013) explained a number of advantages of using a PPML estimator. First, it is a consistent estimator regardless of how the data are distributed. The only key assumption is that the zero and non-zero values are produced by the same data generating process. Second, PPML is scale invariant. Hence results from a model with trade flows in dollars as the dependent variable will be the same as those obtained with trade flows in thousands or millions of dollars as the dependent variable. Third, interpretation of the coefficients from the PPML model is straightforward and same as OLS. Silva and Tenreyro (2006) have also shown that PPML estimator has the additional advantage that it takes care for heteroscedasticity in trade data.

PPML is hence our preferred estimation method.[37] However, following majority of the studies using gravity model (see, for example, Head and Mayer, 2014), we also provided OLS estimates as a robustness check in Section 8.2. PPML will estimate the equation without taking log of the dependent variable in order to include zero values

[37] PPML estimates are generated in Stata using the command "ppmlhdfe" (Correia et al., 2018a, b).

of exports and imports naturally. The coefficients of any explanatory variables entered in logarithms can still be interpreted as semi-elasticities, as under OLS (see Shepherd; 2013, p. 51 to 55).

3.8. Results

Our empirical analysis is divided into two parts. We will first analyse the wider implications of China's aid on the trading behavior of developing countries. For this purpose, we will estimate the gravity equation for Chinese aid recipients' exports to the rest of the world (see Table 3.3) and then for these recipients' imports from the rest of the world (see Table 3.4). As a next step, we will evaluate the bilateral effects of China's aid on trade with recipient countries (see Table 3.5).

3.8.1a. Impact of China's Aid on Developing Countries' Exports

We start with the traditional naïve estimation of the gravity model as specified in equation (2) on a sample of 134 developing countries in the world. The aim is to check that our gravity equation is well specified. The naïve gravity model includes the standard gravity model control variables as well as year fixed-effects in order to control for any shocks that affect global trade flows in a particular year.

Starting with the key explanatory variable of our interest in *Model 1, China_Aid* evaluates the impact of China's aid on recipients' exports and imports to the rest of the world. As seen from *Model I*, the coefficient on *China Aid* is positive and statistically significant for recipients' exports to the rest of the world. The substantive effect suggests that an increase in China's aid by 1% increases the recipient countries

exports with rest of the world by 0.03%. This result supports the hypothesis that China's aid is positively correlated with recipients' exports to the rest of the world. The coefficient in italics report the implied average return on aid in dollar terms.[38] It indicates that with $1 increase in China's cumulative aid in the last 3-years, recipients' exports increase by an average of $20. The average return on China's aid is quite high but note that we haven't yet controlled for unobserved heterogeneity. As concerns the impact of aggregated aid from DAC donors, we find a negative effect which is significantly different from zero at the 1% level. One possible explanation for this negative sign could be that large amount of aid flows from traditional donors could adversely affect export performance of developing countries due to an appreciation of real exchange rate. Rajan and Subramanian (2005a, 2005b) argued that foreign aid raises the domestic demand for goods and services thereby deriving up prices in the non-traded sector which causes the real exchange rate to appreciate.

All other control variables in our gravity model have the expected signs and are statistically significant. For example, the economic sizes of the country pairs, common language, contiguity, and regional trading agreement have a positive impact on exports. Whereas, negative and significant coefficient on distance indicates that the greater the distance between two countries, the lesser will be the export volume. The sign and significance of standard gravity control variables in *Model 1* confirm that our gravity equation is specified correctly.

[38] The average dollar return on aid is calculated as: $\beta * \frac{Av(Exp)}{Av(Aid)}$, where β represents the coefficient on China_Aid; $Av(Exp)$ denotes average recipients' exports to the rest of the world and; and $Av(Aid)$ denotes average China's aid to recipients.

We have also performed a Ramsey's RESET (regression specification error test) to check the adequacy of all the estimated models. It is a test of specification error in the functional form of the model. It checks if the conditional expectations are accurately specified. For this purpose, we predict the fitted values for the various specifications and then include squared fitted values into the regression. If the model is correctly specified, the squared fitted values term should be confirmed as insignificant. The p-values for this test are noted at the bottom of all tables. The RESET test results indicate we cannot reject the null-hypothesis of correct functional form for each of the estimated models. We also investigated presence of multicollinearity using the Variance Inflation Factor (VIF). The VIFs of all the explanatory variables are within a safe range of less than 2, suggesting multicollinearity is not a problem.

As a next step, we include country pair-fixed effects in *Model 2* in order to capture time-invariant trade cost determinants which are common between recipient-partner. In this method, variables that are constant across country pairs (for example, distance, dummy variables for contiguity, language and trade agreement) must be dropped. The coefficient on our key explanatory variable indicates that a 1% increase in China's cumulative aid in the last three years is expected to increase recipients' exports in the current year by 0.007%, which is much smaller in magnitude than *Model 1*. The average dollar return on aid is now reduced from $20 to $4. This is because we have now controlled for all observable and unobservable time-invariant trade costs. Nevertheless, the coefficient is still positive and significant at the 5% level.

Model 3 is our preferred specification where we control for MRT (partner-time fixed effects) in order to estimate full gravity model, as described in Section 6. Note that

partner-time fixed effects will also absorb the GDP of the partner country. The aid coefficient is positive and significant but still lower in magnitude than *Model 1*. This is because the model picks up on the likelihood that changes in trade cost in the partner country can affect recipients' export with other countries because of relative price effects. Previous studies have also found smaller aid-effects while estimating a theory-based gravity model that takes into account MRT (Nowak-Lehmann et al., 2013; Martínez-Zarzoso et al., 2014). Our results further confirm that a failure to account for MRT could lead to an upward bias in foreign aid effects.

On the basis of above findings from the first three models, we are reasonably confident that China's aid is positively correlated with recipients' exports. However, it is often difficult to identify the exact mechanism through which aid stimulated exports. Based on our discussion on potential transmission channels (see Section 2) as well as the fact that a significant portion of China's aid is directed towards infrastructure and production sector,[39] it seems more likely that recipients' exports have been benefitted from investment in trade-related sectors. A disaggregated analysis on the types of aid could help identify the exact transmission channel through which China's aid might be promoting recipients' exports. Moreover, we also aim to identify the major export commodity groups which have been benefitted by China's aid in future work by performing the analysis at a disaggregate commodity level.

[39] See Figure 3.2 which shows the top 3 sectors which were recipient of China's aid during the period of our study are energy generation and supply; transport and storage; industry, mining and construction

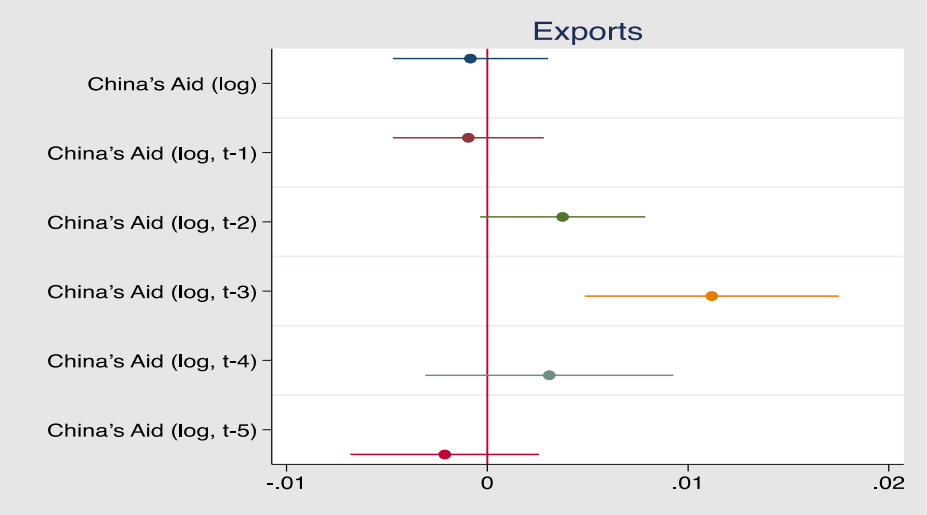
Table 3.3: Impact of China's Aid on Overall Exports, PPML (2003-2014)

DV: Exports in Constant USD	(Model 1)	(Model 2)	(Model 3)
China's Aid (log, T-3)	0.0356***	0.0076**	0.0096***
	(0.0097)	(0.0032)	(0.0032)
Average Return in Dollar Terms	20.86	4.45	5.63
Agg. Aid by other Donors (log, T-3)	-0.2264***	0.0198	0.0269*
	(0.029)	(0.0155)	(0.014)
GDP_Origin (log)	0.9844***	0.4783***	0.4301***
	(0.0231)	(0.09)	(0.1001)
GDP_Destination (log)	0.8810***	0.6305***	
	(0.0187)	(0.0584)	
Distance (log)	-0.8041***		
	(0.0614)		
Contiguity (dummy)	0.5810***		
	(0.1203)		
Common language (dummy)	0.3210***		
	(0.1036)		
Colonial relationship (dummy)	0.192		
	(0.1937)		
Trading Agreement (dummy)	0.4537***		
	(0.0834)		
Year-FE	✓	✓	X
Pair-FE	X	✓	✓
Destination-time FE	X	X	✓
Pseudo R-squared	0.8356	0.9814	0.9834
RESET test (p-value)	0.4866	0.2754	0.2211
N	274,056	207,212	224,471

Notes: T-3 represents cumulative aid in the previous 3 years. Standard errors in parentheses clustered by donor-recipient pairs. *** p<0.01, ** p<0.05, * p<0.1. Reset reports the p-value of a Ramsey Reset specification test, which H_0 is that the model is correctly specified.

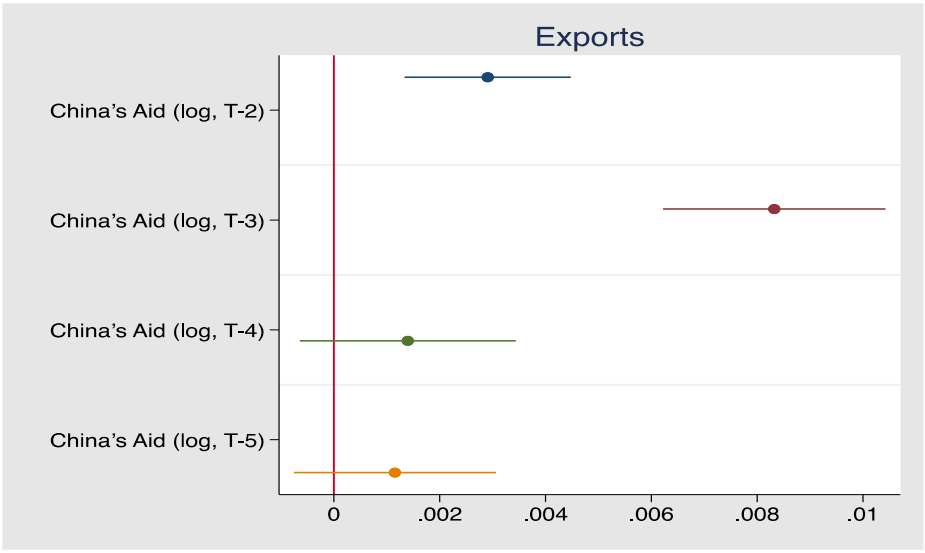
As discussed above in Section 2, different types of aid could affect trade after varied time lags. For instance, aid directed towards infrastructure is often to fund projects in rail and road networks that have a considerable period to completion. The increase in aid recipient's exports stimulated by infrastructure projects financed by China's aid, are therefore likely to take some time to appear. Likewise, any good-will effects of aid also take time to arise. Our baseline results assume a three-year time delay is appropriate on average. In order to demonstrate that three years is an appropriate approximation of the average time delay between receiving aid and its impact on exports, we es-estimate *Model 3 with* a range of instantaneous and lagged effects. The results are shown in the coefficient plot in Figure 3.3a and 3.3b. As can be seen from the Figure 3.3a, only the three-year lag effect is significantly different from zero. Whereas, the two- and three-year cumulative lag effects are significant in Figure 3.3b, suggesting that cumulative China's aid in the previous two and three years is significantly correlated with recipients' exports in the current year. Together the two figures confirm our choice of cumulating aid over the last three years as a reasonable approximation of the time delay between receiving aid and its impact on exports.

Figure 3.10a: Impact of China's Aid on recipients' Exports with Varied Lag Lengths (Discrete Lags)



Note: t represents number of years i.e., i.e., China's Aid (log, t-1) represents China's aid received by a country last year.

Figure 11.3b: Impact of China's Aid on recipients' Exports with Varied Lag Lengths (Joint Significance of Lags)



Note: T represents cumulative number of years i.e., China's Aid (log, T-2) represents China's cumulative aid received by a country in the last two years.

3.8.1b. Impact of China's Aid on Developing Countries' Imports

In line with the preceding section, both the naïve and structural gravity model are estimated in order to evaluate the impact of China's aid on recipients' countries' imports from rest of the world (see Table 3.4). *Model 4* shows that the sign and significance of all the gravity control variables are in line with our expectations and the previous literature. With regards to our key variable of interest, the coefficient on China's aid is not significant in *Model 4*. However, this estimate may be vulnerable to omitted variable bias, and there is some support for this suggestion in that China's aid does attract a positive and significant coefficient in *Models 5* and *6*, after controlling for the pair-fixed effects and MRT. These results further confirm the importance of estimating a structural gravity model. The positive sign on China's aid in our preferred Model 9 indicates that a one percent increase in China's cumulated aid over the last three years will increase recipients' imports from rest of the world by 0.008% in the present year. The most likely explanation for this finding is that China's aid increases recipient countries' disposable income which provides residents in the recipient country with greater ability and desire to import goods from both the donor and the rest of the world. In dollar terms, on average, $1 worth of cumulative China's aid in the last three years is found to increase recipients' import by $4.6. The coefficient is strongly significant at the 1% level.

Table 3.4: Impact of China's Aid on Overall Imports, PPML (2003-2014)

DV: Imports in Constant USD	(Model 4)	(Model 5)	(Model 6)
China's Aid (log, T-3)	0.0119	0.0081***	0.0084***
	(0.0074)	(0.0022)	(0.0018)
Average Return in Dollar Terms	6.61	4.50	4.67
Agg. Aid by other Donors (log, T-3)	-0.0467	0.009	0.0106
	(0.0288)	(0.0104)	(0.0089)
GDP_Origin (log)	0.8425***	0.5328***	0.5484***
	(0.024)	(0.0386)	(0.0327)
GDP_Destination (log)	0.8423***	0.5832***	
	(0.014)	(0.0361)	
Distance (log)	-0.8215***		
	(0.0526)		
Contiguity (dummy)	0.5580***		
	(0.0975)		
Common language (dummy)	0.1659		
	(0.1039)		
Colonial relationship (dummy)	0.4402**		
	(0.2004)		
Trading Agreement (dummy)	0.4795***		
	(0.0703)		
Year-FE	✓	✓	X
Pair-FE	X	✓	✓
Destination-time FE	X	X	✓
Pseudo R-squared	0.8380	0.9830	0.9860
RESET test (p-value)	0.0259	0.0000	0.0000
N	274000	209000	230000

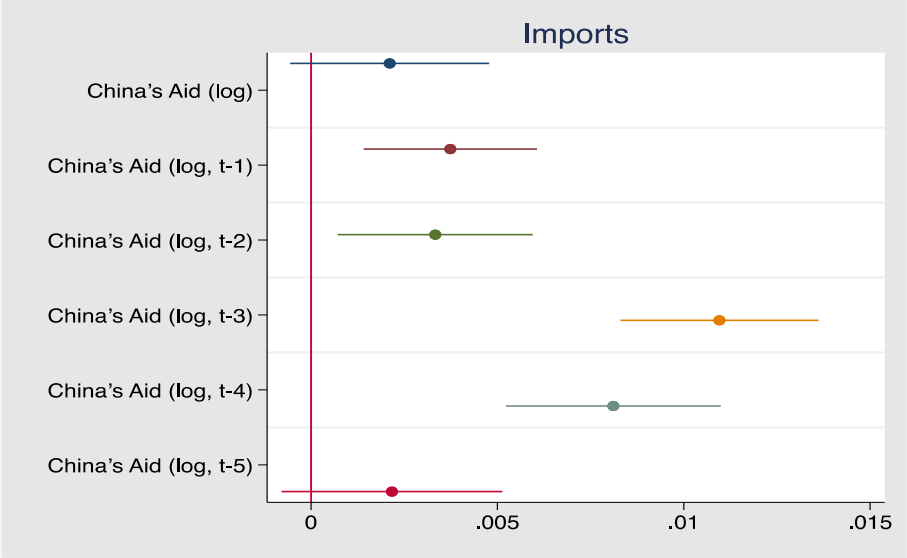
Notes: T-3 represents cumulative aid in the previous 3 years. Standard errors in parentheses clustered by donor-recipient pairs. *** p<0.01, ** p<0.05, * p<0.1. Reset reports the p-value of a Ramsey Reset specification test, which H_0 is that the model is correctly specified.

As a next step, we re-estimated *Model 6* with instantaneous as well as lagged effects of aid with varied lag lengths of one to five years. The results are shown in Figure 3.4a and 3.4b. China's aid is found to have a significant positive impact on recipients' imports with the lag length of one to four years (see Figure 3.4a). The positive effects of China's aid on imports vanish after the four-year period. Similarly, China's cumulated aid over the last two, three and four years has a significant positive impact on recipients' imports in the current year (see Figure 3.4b). Based on this finding, we should ideally cumulate China's aid over the last four-year period. However, we chose to cumulate the aid volume over the last three years in order to remain consistent with our definition of China's aid in both exports and imports regression. Moreover, we found fairly similar results in magnitude and significance for both three- and four-year cumulative lag effects.[40]

[40] Results are available on request.

Figure 3.12a: Impact of China's Aid on recipients' Imports with Varied Lag Lengths

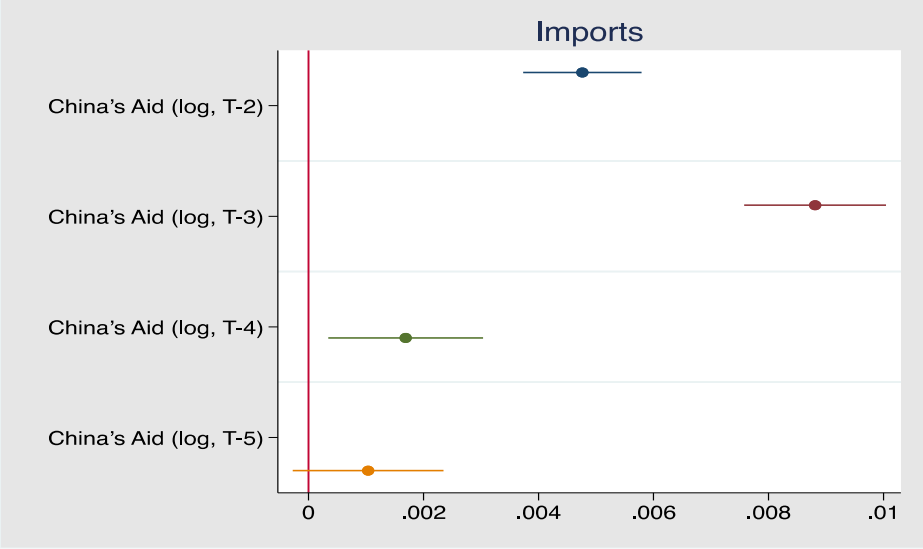
(Discrete Lags)



Note: t represents number of years i.e., i.e., China's Aid (log, t-1) represents China's aid received by a country last year.

Figure 3.13b: Impact of China's Aid on recipients' Imports with Varied Lag Lengths

(Joint Significance of Lags)



Note: T represents cumulative number of years i.e., China's Aid (log, T-2) represents China's cumulative aid received by a country in the last two years.

3.8.2. Impact of China's Aid on Bilateral Trade with Developing Countries

We now evaluate the impact of China's aid on bilateral trade between China and the developing countries. The idea is to analyse whether China's aid increase recipients' exports and imports from China as compared to the rest of the world.

Model 7 evaluates the bilateral effects of China's aid on recipients' exports, whereas *Model 8* evaluates its impact on recipients' imports (see Table 3.5). A significant positive coefficient on the variable *China_Aid*Dummy* in both the models will indicate that China's aid is promoting recipients' exports and imports from China as compared to rest of the world. The coefficient on *China_Aid*Dummy* in both the models is not significantly different from zero. It shows that recipients do not significantly increase either their imports from or exports to China as a result of receiving aid.

In contrast to the criticism on selfish motives behind China's aid, we do not find any strong evidence that China derives unfair trade advantages from its aid. Although AidData's database provides no information on the tying status of aid projects, this result suggests that China's aid is not as strictly tied with the purchase of goods either from China or the recipients as the anecdotal evidences lead us to believe (Wagner, 2003; Ajakaiye, 2006; Brookes and Shin, 2006; Taylor, 2009). Overall, we have found positive wider implications of China's aid and do not find any support for the critique in literature questioning the trade enhancing motives of China's aid.

Table 3.5: Impact of China's Aid on Bilateral Exports and Imports, PPML (2003-2014)

	(Model 7, Exports)	(Model 8, Imports)
China's Aid (log, T-3)	0.0086***	0.0086***
	(0.0033)	(0.0021)
China Dummy * China's Aid (log, T-3)	0.0111	-0.0012
	(0.0105)	(0.004)
Agg. Aid by other Donors (log, T-3)	0.0270*	0.0106
	(0.014)	(0.0089)
GDP_Origin (log)	0.4288***	0.5483***
	(0.0999)	(0.0326)
Pair-FE	✓	✓
Destination-time FE	✓	✓
Pseudo R-squared	0.9835	0.9860
RESET test (p-value)	0.2140	0.0000
N	224000	230000

Notes: T-3 represents cumulative aid in the previous 3 years. Standard errors in parentheses clustered by donor-recipient pairs. *** p<0.01, ** p<0.05, * p<0.1. Reset reports the p-value of a Ramsey Reset specification test, which H_0 is that the model is correctly specified.

3.8.3. Robustness Check

We subject our key empirical results to a battery of robustness tests. As a first robustness check, we compared our key results using OLS estimator. Head and Mayer (2014) recommend complementing the PPML estimates with those from the OLS. The dependent variable for the OLS is estimated in logs and the estimates are generated using the command "reghdfe" by Correia (2014, 2016). For handling missing values, we adopted the common approach of adding a small value of 1 before taking logarithms (Yotov et al., 2016). The results are presented in Table 3.6. As can be seen from *Model 9-12*, the magnitudes of all the coefficients are biased towards zero as compared to the PPML estimates. As far as the significance of key explanatory variable of China's aid is concerned, it only shows a significant impact on recipients' imports from the rest of the world. This confirms that OLS estimates understates the impact of each variable in the presence of many zeros and hence, supports our choice of using PPML estimator.

As a second robustness check, we truncate the sample by excluding all zero trade flows. This is to evaluate whether or not a large proportion of zero trade values in the dependent variable has biased the estimates obtained from PPML. The results are reported in *Model 13-16* of Table 3.6. The estimated coefficients are fairly similar in magnitude and significance to the baseline results confirming that a large proportion of zero values does not affect the performance of PPML estimator.

Table 3.6: Robustness of Results using OLS Estimator and Zero-Truncated Sample

	OLS Estimates				PPML Estimates on Zero-Truncated Sample			
	Overall Exports	Overall Imports	Bilateral Exports	Bilateral Imports	Overall Exports	Overall Imports	Bilateral Exports	Bilateral Imports
	(Model 9)	(Model 10)	(Model 11)	(Model 12)	(Model 13)	(Model 14)	(Model 15)	(Model 16)
China's Aid (log, T-3)	-0.0002	0.0164***	-0.0002	0.0163***	0.0091***	0.0077***	0.0080**	0.0077***
	(0.0021)	(0.0021)	(0.0022)	(0.0021)	(0.0031)	(0.0017)	(0.0033)	(0.0019)
Agg. Aid by other Donors (log, T-3)	-0.0114*	0.0251***	-0.0114*	0.0251***	0.0286**	0.0118	0.0287**	0.0118
	(0.0064)	(0.0062)	(0.0064)	(0.0062)	(0.0139)	(0.0088)	(0.0139)	(0.0088)
GDP_Origin (log)	0.2526***	0.5454***	0.2526***	0.5454***	0.4234***	0.5482***	0.4220***	0.5482***
	(0.0234)	(0.0209)	(0.0234)	(0.0209)	(0.0998)	(0.0327)	(0.0996)	(0.0327)
Pair-FE	✓	✓	✓	✓	✓	✓	✓	✓
Destination-time FE	✓	✓	✓	✓	✓	✓	✓	✓
Pseudo R-squared	0.9070	0.9125	0.9070	0.9125	0.9825	0.9859	0.9825	0.9859
N	322,904	322,904	322,904	322,904	153100	158609	153100	158609

Notes: Dependent variable in Model 1-4 is logged trade flows in constant USD whereas dependent variable in Model 5-8 is trade flows in levels. T-3 represents cumulative aid in the previous 3 years. Standard errors in parentheses clustered by donor-recipient pairs. *** p<0.01, ** p<0.05, * p<0.1.

As a third robustness check, we split the developing countries based on their income status (See Table 3.7). The idea is to measure the differentiated impact of aid on trade by income level of recipient countries. Using the World Bank classification, we divide the countries into low-income; lower-middle income and upper-middle income countries. A priori, the impact of aid on recipients' exports and imports may differ in each income group as they differ in their initial endowments, quality of infrastructure and production technology. Furthermore, the impact of different types of aid is likely to vary across income groups. For instance, Basnett, et al*.,* (2012) suggest that aid to infrastructure, mainly transport infrastructure, is more effective in low-income countries where it is needed the most, whereas aid flows to the business sectors are more effective in upper-middle income countries (Basnett, et al., 2012, p.25).

Starting from *Model 17*, we find that China's aid stimulates the exports of low-income countries to the rest of the world and when compared to the lower-middle and upper-middle income aid recipients in *Model 18* and *19*, it appears that China's aid has a relatively stronger effect on exports of low-income countries. These findings are likely to be influenced by the fact that low income countries tend to be more dependent on aid to overcome supply side constraints. The impact of China's aid on the exports of lower-middle and upper-middle income countries is fairly similar in magnitude. Overall, the key results hold in all developing countries regardless of their income status (*Model 17-19*).

We repeat the same exercise for recipients' imports from the rest of the world. After splitting the sample based on income status, we don't find any significant effects of China's aid on the imports of low-income and upper-middle income countries (*Model*

20 and 22). The positive impact of China's aid on imports thus seems to be derived from lower-middle income countries only (*Model 21*). It could be the case lower-middle income countries are mainly receiving aid in the form of cash transfers, thereby increasing their financial capacity to import goods. Whereas, low-income countries have yet to hit an income threshold at which more extensive import demand is achievable.

Finally, Table 3.8 presents the robustness of results for recipients' bilateral imports and exports with China respectively. In line with our baseline results, China's aid does not increase recipients' exports and imports from China as compared to the rest of the world. The only exception is for low-income countries which seem to import more from China as compared to the rest of the world (see Model 26). Plausible mechanisms behind this influx of imports from donor include good-will effects or tied aid. For instance, China's aid may be attached with conditions that goods to be used in the aid projects should be purchased from China. Since AidData does not provide any information on the tying-status of aid projects, it is difficult to explain why this effect shows up in low-income countries only.

Table 3.7: Disaggregated Results of Recipients' Overall Exports and Imports from the Rest of the World by Income Status of Developing Countries

	Overall Exports			Overall Imports		
DV: Exports in Constant USD	Low-Income Countries	Lower-Middle Income Countries	Upper-Middle Income Countries	Low-Income Countries	Lower-Middle Income Countries	Upper-Middle Income Countries
	(Model 17)	(Model 18)	(Model 19)	(Model 20)	(Model 21)	(Model 22)
China's Aid (log, T-3)	0.0396**	0.0086**	0.0087***	0.0071	0.0200***	0.0024
	(0.016)	(0.0037)	(0.0034)	(0.0067)	(0.0028)	(0.0018)
Average Return in Dollar Terms	23.21	5.04	5.10	3.94	11.11	1.33
Agg. Aid by other Donors (log, T-3)	-0.2115***	-0.0001	0.0403***	-0.0278	0.0036	0.0155
	(0.0659)	(0.0279)	(0.0153)	(0.0321)	(0.0167)	(0.0106)
GDP_Origin (log)	0.4512***	0.5220***	0.3930***	0.3523***	0.5275***	0.5465***
	(0.1542)	(0.1523)	(0.1041)	(0.0828)	(0.0505)	(0.0429)
Pair-FE	✓	✓	✓	✓	✓	✓
Destination-time FE	✓	✓	✓	✓	✓	✓
Pseudo R-squared	0.9386	0.9809	0.9861	0.9599	0.9865	0.9891
N	54,168	81,088	88,268	56,373	82,633	90,790

Notes: T-3 represents cumulative aid in the previous 3 years. Standard errors in parentheses clustered by donor-recipient pairs. *** p<0.01, ** p<0.05, * p<0.1.

Table 3.8: Disaggregated Results of Recipients' Bilateral Exports and Imports from the Rest of the World by Income Status of Developing Countries

	Bilateral Exports			Bilateral Imports		
DV: Exports in Constant USD	Low-Income Countries	Lower-Middle Income Countries	Upper- Middle Income Countries	Low-Income Countries	Lower-Middle Income Countries	Upper- Middle Income Countries
	(Model 23)	(Model 24)	(Model 25)	(Model 26)	(Model 27)	(Model 28)
China's Aid (log, T-3)	0.0285*	0.0077**	0.0077**	0.0005	0.0213***	0.0021
	(0.0148)	(0.0038)	(0.0036)	(0.0074)	(0.0031)	(0.002)
China Dummy * China's Aid (log, T-3)	0.0844	0.0092	0.0103	0.0436***	-0.0084	0.0022
	(0.065)	(0.0175)	(0.0082)	(0.0169)	(0.006)	(0.005)
Agg. Aid by other Donors (log, T-3)	-0.2064***	-0.0001	0.0405***	-0.0282	0.0035	0.0155
	(0.0664)	(0.028)	(0.0153)	(0.0323)	(0.0166)	(0.0106)
GDP_Origin (log)	0.4492***	0.5201***	0.3923***	0.3488***	0.5270***	0.5467***
	(0.1537)	(0.1522)	(0.1037)	(0.0819)	(0.0504)	(0.0429)
Pair-FE	✓	✓	✓	✓	✓	✓
Destination-time FE	✓	✓	✓	✓	✓	✓
Pseudo R-squared	0.9388	0.9809	0.9861	0.9599	0.9865	0.9891
N	54,168	81,088	88,268	56,373	82,633	90,790

Notes: T-3 represents cumulative aid in the previous 3 years. Standard errors in parentheses clustered by donor-recipient pairs. *** p<0.01, ** p<0.05, * p<0.1.

3.9. Conclusion

The chapter began by reviewing the literature on the foreign aid–trade link of traditional donors. This review explains that existing studies have predominantly focused on the impact of aid on donors' exports and found that there is a general consensus that aid from traditional donors has a robust positive effect on donors' exports to recipient countries. A small but unrobust effect of aid on recipients' imports from donors was also found in some studies. We have seen that China has become an increasingly important aid donor, but there has been very little empirical work on the potential trade enhancing impacts of China's aid. Nonetheless, China is often accused of having strong commercial motivations for offering aid; that aid policy is driven by the desire to boost their sales of export to recipient countries and/or to gain access the recipient countries' natural resources (which would result in an increase in China's imports). Surprisingly, we found that there is a lack of existing empirical evidence that can provide solid justification for these criticisms. It is this lack of evidence that this chapter seeks to address.

This chapter then contributes to the existing the literature by providing a detailed empirical analysis of the relationship between trade and China's aid. In contrast with much of the research on China's aid limited to Africa, our sample includes the entire pool of developing countries over time. Moreover, previous studies linking aid and trade have mainly looked into the bilateral effects of aid on recipients' exports/imports from donors. This chapter investigates the overall effect of China's aid on recipients' exports and imports from not only by China but also the rest of the world.

Our results from gravity model support the view that China's aid is positively correlated in promoting recipients' exports and imports from the rest of the world. We find a robust positive effect of China's aid on developing countries' exports regardless of their income status. Whereas, the positive effect on imports seems to be mainly driven by lower-middle income countries. Why this effect shows up in this income group only is an interesting avenue for further research. Perhaps lower-middle income countries are mainly receiving aid in the form of cash transfers, allowing them to dispose of a higher financial capacity to import goods. A disaggregated analysis on the types of aid could help in identifying the transmission channels through which China's aid is promoting imports in lower-middle income countries.

As far as the bilateral effect of China's aid on recipients' exports and imports from China are concerned, we do not find that recipient countries are exporting and importing more from China as a result of receiving aid. This is an important finding because the criticisms that China has mainly commercial motivations for offering aid, is not supported.

Nonetheless, we do find some evidence of an increase in low-income countries' imports from China over the sample period relative to their imports from the rest of the world. Since the dataset provides no information on the tying-status of aid projects, it is difficult to explain why this effect shows up in this income group only. Perhaps China is tying a large proportion of its aid provided to low-income countries with imports of good, restricting them to buy more from China as compared to the rest of the world. In addition, it seems likely that some export/import sectors (i.e., agriculture, manufacturing, minerals) may respond more to aid than others. On this basis, it would

be interesting to test whether the impact of China's aid on trading behaviour of developing countries is symmetric over different sectors. Examining such disaggregated data is beyond the scope of this thesis and left for future work.

While we have evaluated the total impact of China's aid on trading behaviour of developing countries by means of export/import equations based on an augmented gravity model, a limitation of this approach is that it is not feasible to directly analyse specific transmission channels from aid to trade within this framework.

Appendix A.6. Impact of China's Aid on Overall Imports/Exports and Bilateral Imports/Exports, Key Results after Excluding Outliers PPML (2003-2014)

DV: Exports in Constant USD	(Model 29)	(Model 30)	(Model 31)	(Model 32)
	Overall Exports	Overall Imports	Bilateral Exports	Bilateral Imports
China's Aid (log, T-3)	0.0096***	0.0084***	0.0086***	0.0086***
	(0.0032)	(0.0018)	(0.0033)	(0.0021)
China Dummy * China's Aid (log, T-3)			0.0111	-0.0012
			(0.0105)	(0.004)
Agg. Aid by other Donors (log, T-3)	0.0269*	0.0106	0.0270*	0.0106
	(0.014)	(0.0089)	(0.014)	(0.0089)
GDP_Origin (log)	0.4301***	0.5484***	0.4288***	0.5483***
	(0.1001)	(0.0327)	(0.0999)	(0.0326)
Pair-FE	✓	✓	✓	✓
Destination-time FE	✓	✓	✓	✓
Pseudo R-squared	0.9834	0.9860	0.9835	0.9860
RESET test (p-value)	0.2211	0.0000	0.2140	0.0000
N	224,467	230000	224000	230000

Notes: T-3 represents cumulative aid in the previous 3 years. Standard errors in parentheses clustered by donor-recipient pairs. The table reports the key results after excluding Russia, Turkmenistan, Venezuela, and Ecuador. *** p<0.01, ** p<0.05, * p<0.1. Reset reports the p-value of a Ramsey Reset specification test, which H_0 is that the model is correctly specified.

Appendix A.7. Alternate Specification of Econometric Model

As discussed in Section 3.6. recipient country *i*-time fixed effects are perfectly colinear with the time-varying aid variable. In order to check the robustness of our key results, we adopted an alternate approach to control for multilateral resistance term (MRT). We assume that China's aid can only affect bilateral trade with China. So, the key explanatory variable $ChinaAid_{ijt}$ only takes a non-zero value if the partner country is China (j=China). Then clearly recipient country *i*-time fixed effects (D_{it}) is not collinear with $ChinaAid_{ijt}$, since $ChinaAid_{ijt}$ varies with *j* whereas D_{it} does not. Theoretically, GDP enters gravity equations with unitary coefficients, so we take on to the left-hand side. The model can be specified as follows:

$$Z_{ijt} \equiv lnX_{ijt} - lnY_{it} - lnY_{jt} = \alpha + \alpha_{it}D_{it} + \alpha_{jt}D_{jt} + \beta_{ij}ln\left[ChinaAid_{ijt}\right] + \alpha_{ij}D_{ij} + \varepsilon_{ijt} \quad (1)$$

β_{ij} in equation 1 will reflect the impact of China's aid on recipients' bilateral China trade with China (under the assumption that China's aid only affects bilateral trade). As a next step, we allow China's aid to have an effect on recipients' trade with the rest of the world even if partner country is not China ($j \neq$ China). In equation 2, the coefficient on China's aid will measure the impact of China's aid on recipients' trade with the rest of the world.

$$Z'_{ijt} \equiv Z_{ijt} - \alpha_{it}D_{it} = \alpha + \alpha_{jt}D_{jt} + \beta_{i}ln[ChinaAid_{it}] + \alpha_{ij}D_{ij} + \varepsilon_{ijt} \quad (2)$$

Models 33 and Model 34 in Table A.7. show the regression estimates from equation 1, whereas, Model 35 and Model 36 estimate equation 2. The key conclusions remain the same with this alternate approach to control for MRT.

Appendix A.7. Impact of China's Aid on Overall Imports/Exports and Bilateral Imports/Exports, PPML (2003-2014)

DV: Exports in Constant USD	(Model 33)	(Model 34)	(Model 35)	(Model 36)
	Bilateral Exports	Bilateral Imports	Overall Exports	Overall Imports
China's Aid (log, T-3)	0.0063	0.0080	0.0011**	0.0034**
	(0.0057)	(0.0032)	(0.0022)	(0.0014)
Pair-FE	✓	✓	✓	✓
Destination-time FE	✓	✓	✓	✓
Origin-time FE	✓	✓	X	X
Pseudo R-squared	0.9864	0.9882	0.9820	0.9847
N	280,034	285,742	280,428	286,307

Notes: T-3 represents cumulative aid in the previous 3 years. Standard errors in parentheses clustered by donor-recipient pairs. *** p<0.01, ** p<0.05, * p<0.1.

Conclusion

China has emerged as the largest global provider of foreign aid, surpassing the aid volumes of traditional donors such as the World Bank and the US. The increasing influence of China's aid on parts of the developing world seems to challenge the established aid principles held by the traditional donors. Although the key motivations for China's and traditional donors' aid (i.e., recipients' need and commercial motives) seem to be roughly similar, there are a number of contrasting features between their aid approaches. For example: a) the use of conditionality by traditional donors versus the 'non-interference policy' adopted by China; b) merit-based aid allocation by traditional donors versus. disregard of human rights considerations in China's aid allocation; and c) lack of official data on China's aid versus comprehensive and transparent data provided by traditional donors.

China has earned a reputation as a 'rogue donor' among the Western media and analysts, and some concerns have been raised regarding its contemporary engagement with the recipient countries. For instance, China's aid programme is often criticized for its lack of transparency and allegations have been made in the past that China provides aid to countries with a poor human rights record. China is also accused of targeting its aid to obtain strategic materials from the recipients, and to fund infrastructure projects that primarily serve its own export interests. Its non-interference policy is viewed by traditional multilateral and bilateral donors as undermining their own efforts to improve aid effectiveness and governance in recipient countries, and this was especially so when China continued to provide aid to the Darfur region,

ignoring the abuse of human rights. Considering the mounting criticism and the rising importance of China's aid over the last two decades, the existing body of empirical research on the motivations for and consequences of that aid is very limited. The majority of the empirical studies have evaluated China's aid policies in Africa, whereas this thesis is an attempt to critically examine the underlying motivations behind that aid as well as the impact it has on the entire pool of developing countries.

The first chapter extends the pioneering work of Hernandez (2017) by investigating whether the stringency of conditions (prior actions and benchmarks) attached to World Bank aid projects is influenced by the additional supply of aid from China. The first chapter showed that China is challenging the way in which the World Bank provides aid to African countries, and the impact appears to be evident in measures taken by the World Bank, which has reduced the number of prior actions required for the World Bank projects undertaken in those countries. However, influencing the World Bank's aid in other regions seems rather difficult where we find no statistically significant association between China's aid and prior actions. One plausible explanation of this finding is that China's aid is disproportionately directed towards Africa, while other regions are predominantly reliant on the World Bank to fulfil their aid-based needs. On the other hand, the number of benchmarks attached to the aid projects remains unaffected by China's aid both in Africa and other regions. As benchmarks are only used as reference frameworks, recipient countries appear to be indifferent to the number of benchmarks attached to an aid project, and consequently, the World Bank cannot reduce the number of benchmarks to attract recipients. Lastly, it was found that competition between the World Bank and China's aid is more relevant to concessional

lending, or ODA. This is in line with expectations that the larger the grant element of China's aid projects, the more the recipient countries will value the transfer, thus the number of prior actions that the World Bank can stipulate for its projects must be reduced in order for it to attract recipients. In contrast, China's less concessional forms of aid, or OOF, were found to have no significant impact on prior actions.

Overall, the key results from the first chapter (as well as Hernandez's findings), that China's emergence as an aid donor has a discernible impact on the World Bank conditionality, should be interpreted with caution as they are limited to African countries receiving aid from China. Perhaps, African countries are strategically significant to both China and the World Bank, while the landscape of foreign aid is relatively lesser crowded in other regions. One limitation of the findings of the first chapter is that the framework does not take account of the spill over effects of China's aid. Future work will look at how an increase in the supply of China's aid in a country could affect the World Bank's ability to use conditionality in other countries. Another promising avenue for future research would be to examine whether the World Bank will continue to select aid projects in countries where China is already present, and vice versa.

The second chapter formally assesses the extent to which the role of human rights differs in China's and US' aid allocations, which is essential when determining whether criticisms of China's aid policy in comparison to that of the US are justified. The bivariate analysis of the second chapter demonstrates that a significant share of China's aid flows to countries with poor human rights records. At the same time, the

US seems little different in its provision of aid to these countries. The empirical results also provide some support for the hypothesis that China provides aid to countries with poor human rights records but challenge the view of the optimists who expect better targeted aid from the US The results suggest that donors treat Africa differently with regard to human rights and aid allocations. The thesis findings for Africa contrast with those for other recipients from the rest of the world. Specifically, the results from the sample of African countries suggest that China provides more aid to countries with poor human rights records on the CL scale but found no evidence of human rights considerations in US aid allocation to Africa. Results from the sample of recipient countries elsewhere in the world indicate that human rights considerations are unrelated to China's aid allocations, while countries with poor PTS scores tend to receive more aid from the US. These findings are robust when a distinction is made between humanitarian and non-humanitarian aid and in the sample of countries whose human rights records are below a particular threshold.

Overall, it was found that both China and the US provide more aid to countries whose respect for human rights is low, but that respect is measured on different scales. There is, therefore, a pressing need for traditional donors, including the U.S, to be more considerate about human rights in their aid allocations and set a good example for new donors like China. At the same time, China needs to be a responsible forign aid donor and its government should make a clear stand about the role of human rights in its aid allocations.

One limitation of the findings of the second chapter is that we lack data on the channels through which China is providing aid. For instance, it might be the case that China provides aid to poorly-governed countries mainly through non-state actors (for example, private contractors, NGOs, public-private partnerships) in order to avoid contact with governments that permit the abuse of human rights whilst still addressing the economic needs of the country. The same could apply to the US. Unless China becomes more transparent in its aid allocation criteria and releases official data on that allocation, it will continue to be difficult to fully understand its motivations. However, future work could investigate the channels through which the US is providing aid to the recipient countries which is feasible given the comprehensive aid data provided by the US government.

The third chapter aims to evaluate the impact of China's aid on recipients' overall export and import volumes. The empirical results support the view that China's aid is effective in promoting recipients' exports and imports from the rest of the world. The results are robust to the choice of estimator and treatment of zero values of trade flows. We also find a robust positive effect of China's aid on developing countries' exports regardless of their income status. In contrast, the positive effect on imports seems to be mainly driven by lower-middle income countries. Perhaps lower-middle income countries mainly receive aid in the form of cash transfers, allowing them to dispose of a higher financial capacity to import goods.

As far as the bilateral effect of China's aid on recipients' exports and imports from China is concerned, there was no evidence that the recipients significantly increased

either their imports from or exports to China as a result of receiving aid. This suggests that claims that China's provision of foreign aid is purely motivated by China's self-interest are unjustified. Nonetheless, there was some evidence of an increase in imports from China to low-income countries over the sample period relative to those countries' imports from the rest of the world. Since the dataset provides no information on the tying-status of aid projects, it is difficult to explain why this effect shows up only in this income group. Perhaps China is tying a large proportion of the aid it provides to low-income countries to the import of goods, obliging them to buy more from China than from the rest of the world.

The empirical findings therefore provide little support for the critique in the literature which questions the trade enhancing motives of China's aid. Instead, there is strong evidence of altruistic motives behind China's aid to developing countries. On this basis, the second chapter concludes that the condemnation of China as having purely selfish aid motives is unjustified. The two main limitations of the third chapter are that: a) it is not feasible to directly analyse specific transmission channels from aid to trade within this framework; and b) a disaggregated analysis of the types of aid and sectoral trade could help to identify whether the impact of China's aid on the trading behaviour of developing countries is symmetric over different aid types and trade sectors. Examining such disaggregated data is beyond the scope of this thesis and left for future work.

To sum up, this thesis has allowed for a deeper analysis of China's aid motivations and opened up different views on the impact of China's aid on developing countries.

It is apparent that the World Bank's response to the competitive threat posed by China and the criticism of China's aid provision to countries with poor human rights records is limited to Africa, whereas no evidence was found to support criticism of the commercial motives behind China's aid. It is difficult to draw any conclusions about the real intentions and consequences of China's aid for the developing world without the availability of comprehensive data comparable to the standard data of traditional donors. There is, therefore, a pressing need for the Chinese government to be transparent and open about its foreign aid allocations. Moreover, there is a need for better harmonisation and cooperation among the new and traditional donor communities on aid allocation criteria and the potential conditions attached. This is especially so as the traditional donors continue their efforts to increase the effectiveness of their aid projects.

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