Essays on Chinese Foreign Aid and Domestic Political Institutions

Muhammad Al Amin

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ESSAYS ON CHINESE FOREIGN AID AND DOMESTIC POLITICAL INSTITUTIONS

A Dissertation
Presented in Partial Fulfillment of Requirements
for the Degree of Doctor of Philosophy
in the Department of Political Science
The University of Mississippi

By
MUHAMMAD AL AMIN
August 2022
ABSTRACT

This three essays dissertation project examines the economic and political effects of Chinese foreign aid. China has appeared as an emerging player in international development finance over the last couple of decades, and it is also considered as a leader among alternative donors. In this project, I focus on two strands of research on Chinese foreign aid. First, I study the political effects of Chinese aid, where I examine whether and how Chinese aid props up non-democratic regimes in host countries. Second, I study the economic effects of Chinese aid, where I examine whether and how Chinese aid affects economic and human development outcomes in recipient countries. I use cross-national, subnational, and household-level data, and apply several different statistical methods to conduct my empirical analyses. Findings from regression analyses conducted in the first part of dissertation (chapter 2) suggest that official finance from China potentially props up non-democratic leaders in recipient countries, which may pose challenge to the fundamentals of the US-led liberal world order. On the other hand, findings from regression analyses conducted in the second part (chapter 3 and chapter 4) of this dissertation suggest that despite emphasizing commercial, geo-political, and natural-resource extraction related projects, Chinese aid may contribute to improving economic and human development outcomes, if recipient countries have democratic governments in place.
DEDICATION

For my best friend and wife Shammama, and my daughter Amani.
ACKNOWLEDGMENTS

I would like to express my deepest gratitude to my committee members, Professors Susan Allen, Lauren Ferry, Gang Guo, and John Gardner, for their sincere guidance and continuous support in the last few years. I largely owe the formulation of the idea for this project to Professor Allen. Her insightful feedback and ingenious suggestions have been instrumental in shaping the theory for this project, in conducting the empirical analyses, and in communicating my ideas effectively. Professor Allen has always been available to thoughtfully answer even my most miniscule queries, and sincerely provide me with brilliant advice to address my concerns. I am incredibly grateful to Professor Allen for her relentless support throughout my dissertation journey, without which this project would not have been completed. I would also like to express my deepest gratitude to Professor Ferry for not only being a great mentor, but also an astounding pillar of support throughout the last couple of years. Apart from providing invaluable feedback on my theories and empirics, Professor Ferry’s inspiring guidance and positive outlook has enabled me to persevere through the challenging phases of my dissertation. I am also incredibly thankful for Professor Guo’s ingenious suggestions that have substantially improved my theory and empirical analyses. I would also like to sincerely thank Professor Gardner for providing me with his kind and continuous support throughout my graduate studies, and for providing me with invaluable feedback on my econometric modeling. Apart from my committee members, I gratefully acknowledge the sincere feedback and continuous support from Professors Jonathan Winburn, Gregory Love, and Chuck Smith during the last few years.
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AReNA</td>
<td>Advancing Research on Nutrition and Agriculture</td>
</tr>
<tr>
<td>BRI</td>
<td>Belt and Road Initiative</td>
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<tr>
<td>DAC</td>
<td>Development Assistance Committee</td>
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<tr>
<td>DHS</td>
<td>Demographic and Health Survey</td>
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<td>IFPRI</td>
<td>International Food Policy Research Institute</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>ODA</td>
<td>Official Development Assistance</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>OOF</td>
<td>Other Official Flow</td>
</tr>
<tr>
<td>REIGN</td>
<td>Rulers, Elections, and Irregular Governance dataset</td>
</tr>
<tr>
<td>SPEED</td>
<td>Statistics on Public Expenditures for Economic Development</td>
</tr>
<tr>
<td>VOF</td>
<td>Vague Official Flow</td>
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<tr>
<td>WDI</td>
<td>World Development Indicators</td>
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<td>WHO</td>
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CHAPTER 1
INTRODUCTION

Over the last couple of decades, China has become a leading source of development finance for low and middle income countries. China had been intensively involved in development finance activities since the beginning of 21st century. However, it has enhanced the scale of its engagement in international development finance following the launch of the Belt and Road Initiative (BRI), which was introduced in 2013. China is now being considered as a global leader of development finance1; it is the “lender of first resort” to many low and middle income countries.

Western policymakers, scholars, and journalists criticize Chinese development finance on several grounds. Some critics speculate that China is in a pursuit to become a great power by intensifying its development finance activities in low and middle income countries across the Far East to the Sub-Saharan Africa. These critics add that the BRI is a key tool that the country is using to become a great power. They also claim that Chinese development projects are likely to produce a host of negative externalities in the recipient countries. These include: (i) undermining

1 The amount of Chinese and US development finance was more or less similar over the pre-BRI period (2000-2012). During the time, the amount of annual average development finance commitments from China was USD 32 billion, whereas the amount was nearly USD 34 billion from the US (Dreher et al., 2022). However, within the five years (2013-2017) following the introduction of the BRI, China significantly outscored the US in financing development projects. During this period, the amount of average annual development finance commitments from the US was USD 37 billion, whereas the amount was USD 85.4 billion from China (Dreher et al., 2022).
democratic institutions and fueling corruption, (ii) triggering civil conflict by extending the state’s coercive capacity, and (iii) accelerating environmental degradation (Dreher et al., 2022). Critics also claim that Chinese development finance may dampen the positive gains in health sector and progress in other human development indicators in developing countries that was brought with the help of development finance provided by Western donors over the last seven decades. For instance, former US Secretary of State Hilary Clinton criticized China in her book *Hard Choices* by stating that during her tenure in the State Department, China “paid little attention to the health and development challenges that Western nations and international organizations worried about” (Clinton, 2014, page 271).

As China is increasingly serving as an alternative to Western development finance, many autocratic governments are substituting Western finance with Chinese loans, and thus evading conditionalities associated with Western aid such as policy reform, upholding human rights, ensuring good governance, and pursuing a sustainable economic development path. Evidence suggests that China often provides assistance to leaders who are unable to get assistance from Western donors due to the violation human rights, and limiting freedom of speech and freedom of press in their countries. For instance, China extended support to Mahinda Rajapaksa of Sri Lanka and provided USD 12.4 billion during 2005 to 2014. During the time, Western donors concurrently reduced loans to the country due to human rights violation and use of military interventions to uproot Tamil secessionist movement, which involved an alleged genocide (Dreher et al., 2022).

Scholars and policymakers expect that the economic and political consequences of Chinese development finance are likely to be different than the effects of Western development finance because there are some fundamental differences between the two. Dreher et al. (2022) identify
three factors that motivate China to engage in intensive development finance activities. Consequently, China emphasizes financing large scale projects (e.g., highways, railroads, dams, bridges) that help them achieve these three objectives. China also finances projects that are usually not financed by Western donors, such as building presidential palaces, parliamentary complexes, and soccer stadiums. Financing these types of projects help China offload their domestic industrial overproduction, as host countries are required to use materials from China to implement these projects. On the other hand, apart from having political and strategic objectives, Western donors often focus on projects that are intended to achieving the United Nations’ development goals (e.g., MDGs, SDGs). That is, Western donors significantly focus on financing projects that are related to poverty alleviation and improving health and education sectors in recipient countries. Given that the objective and nature of Chinese and Western development projects are different from several perspectives, we should expect the impact of financing from the two sources to differ as well.

Although China has grown into a global leader in development finance, it does not release comprehensive data on its finance activities, which makes systematic research on the motives and

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2 First, offloading domestic industrial overproduction (such as excess production of steel, iron, cement, glass, aluminum, and timber) generated due to inefficiency of state-owned companies. China decreases supply of these commodities in the local market by creating international demand through suppliers’ credit. Second, managing excess foreign exchange reserves generated from high trade surplus. Third, acquisition of natural resources to sustain high levels of economic growth in home country.

3 Scholars have identified a number of factors that influence Western donors’ aid allocation decisions. These include: strategic interests (reward allies, punish enemies, and build coalitions), trade relations, former colonial ties, policy concessions, and UNGA vote buying (Alesina and Dollar, 2000; Bueno De Mesquita and Smith, 2007; Easterly and Pfitz, 2008; Vreeland and Dreher, 2014).
impacts of Chinese development assistance a highly challenging task. However, AidData\textsuperscript{4} has taken an initiative to gather and disseminate Chinese aid data based on their novel Tracking Underreported Financial Flows (TUFF) methodology, which has attracted a group of scholars to examine the motives and impacts of Chinese development finance. Following these scholars, in this dissertation project, I investigate the political and economic effects of Chinese aid in recipient countries. I propose a number of novel arguments in my dissertation to explain whether and how Chinese aid affects political, economic, and human development outcomes in receiving countries. I test my arguments empirically using cross-national, sub-national, and household level data, and by applying several different statistical methods. As scholarship on the effectiveness of Chinese aid is currently growing, I expect that essays in this dissertation project will add new perspectives to the current discourse on the political economy of Chinese aid.

Broadly, in this dissertation project, I focus on two strands of research on Chinese foreign aid. The first strand (chapter 2) investigates the political effects of Chinese aid, whereas the second strand (chapter 3 and chapter 4) examines the economic effects of Chinese aid\textsuperscript{5}.

In chapter 2, I examine whether Chinese aid enhances political survival of incumbents in recipient countries, and whether the likelihood of leader survival is greater in non-democracies than democracies. I propose two mechanisms for how Chinese aid possibly affects the likelihood of leader survival. First, I argue that higher inflows of Chinese aid help recipient leaders

\textsuperscript{4} A research lab located at the College of William & Mary’s Global Research Institute, which was established in 2004 “to provide the global development community with more granular and comprehensive data on foreign assistance projects worldwide”. For more information, visit https://www.aiddata.org/

\textsuperscript{5} I analyze the impact of both aid and debt financed Chinese development projects, and I use the term Chinese aid, Chinese development finance, and Chinese development assistance interchangeably throughout the document.
redistribute resources among respective winning coalitions, which earns them loyalty from members of the winning coalition and lowers potential threat from opposition, hence a higher likelihood of leader survival. Second, I contend that credit claiming for large scale Chinese aid projects helps leaders stay in power. However, I expect that impact of Chinese aid on leader survival to be greater in non-democracies than in democracies because of two reasons. First, as non-democracies have fewer institutional barriers to prevent misuse of foreign aid monies, leaders have a greater opportunity to use aid funds for political survival. This increases the likelihood of extended leadership tenure in non-democracies more than in democracies. Second, individual-level utility from public goods is much lower than individual-level utility from private goods. Therefore greater provision of public goods in democracies generates weaker loyalty than distribution of greater amount of private goods in non-democracies. Hence, Chinese aid prolongs the tenure of non-democratic leaders more than their democratic counterparts. I test the implications of this theory in the second chapter of my dissertation using time series cross sectional data. Empirical analyses based on a Chinese aid dataset constructed by Dreher et al. (2021) for the period of 2000-2014 indicate that Chinese aid significantly increases the odds of leader survival for non-democracies. However, Chinese foreign aid does not have any statistically significant leader turnover effect for democracies.

The second part of my dissertation (chapters 3 and 4) examines the economic effects of Chinese foreign aid. I propose that despite emphasizing commercial, geo-political, and natural-resource extraction related projects, Chinese aid is likely to improve individual level well-being, given that recipient countries have democratic governments in place. I assume that inflows of Chinese aid projects free up money from host countries’ budget that governments can spend for other purposes. The spending decisions on freed up resources is guided by the quality of the host
state’s political institutions. I argue that in democracies, governments use freed up money from Chinese aid in improving the well-being of its citizens. As democratic leaders need votes to be reelected and want to minimize public dissatisfaction that may jeopardize their tenure, they reallocate greater amount of freed up money for social sector spending (e.g., health, education, and welfare programs). Higher public spending in social sectors reduces the risk of public agitation, and improves democratic leaders’ reelection prospects. But most importantly, it improves the well-being (e.g., public health) of individual citizens. On the other hand, in non-democracies, leaders use freed up resources to distribute private goods to their small winning coalition, rather than increasing public spending in the social sector. Therefore greater inflows of Chinese aid to non-democracies is less likely to improve well-being at the individual level. I empirically test the theory in chapter 3 and chapter 4 using a combination of cross-national, sub-national, and household level quantitative analyses.

More specifically, in chapter 3, I analyze the impact of Chinese foreign aid on public spending in social sectors, contingent upon regime types in recipient states. Empirical analyses based on time series cross sectional data for 122 Chinese aid recipient countries suggest that Chinese aid increases social sector spending more in democracies than in non-democracies. In chapter 4, I assess the impact of Chinese aid on human development in recipient states, contingent upon the quality of political institutions in place. I ask “Does Chinese aid have a greater positive effect on individual well-being in democracies than in non-democracies?” To answer this question, I utilize subnational level Chinese aid data from AidData's Geocoded Global Chinese Official Finance Dataset, and individual level well-being (malaria incidence rate) data from multiple waves of geocoded Demographic and Health Survey (DHS) data available from AReNA’s DHS-GIS Database. I conduct empirical analyses by applying multilevel modeling
techniques, and my results indicate that Chinese aid improves individual level well-being more in democracies than in non-democracies.

Findings from the first part (chapter 2) of my dissertation imply that official finance from China potentially props up non-democratic leaders in recipient countries, undermining the fundamentals of the US-led liberal world order. In other words, Chinese development finance may trigger democratic backsliding, and deteriorate the core values of democracy such good governance, human rights, freedom of speech, and freedom of press in recipient countries. On the other hand, findings from the second part (chapter 3 and chapter 4) of my dissertation suggest that quality of recipient political institutions plays an important role in realizing the impact of Chinese aid on human development. Despite emphasizing on commercial, geo-political, and natural-resource extraction related projects, Chinese aid may generate positive externalities such as increasing welfare enhancing social sector spending and improving public health if recipient countries have better domestic political institutions in place.
CHAPTER 2: CHINESE FOREIGN AID AND LEADER TURNOVER: DOES CHINESE FOREIGN AID PROP UP NON-DEMOCRATIC REGIMES?

2.1. Introduction

Since the beginning of this millennium, China has appeared as a core player in international development assistance, and it has also emerged as a leader among alternative donors (Bader, 2015a; Brautigam, 2009). Globally, Chinese aid flows have grown fourteen fold during 2000-2014 (the amount has increased from 2.56 billion in 2000 to 36.46 billion in 2014). On average, during 2000-2014, Chinese aid accounted for 0.84 percent of a typical recipient country’s GDP. However, there is a wide variation in the magnitude of dependence on Chinese foreign aid. For instance, during 2000-2014, average Chinese aid to Zimbabwe, Turkmenistan, and Kyrgyz Republic was more than 3 percent of their GDP, while it was more than 5 percent of Cambodia’s GDP, and more than 10 percent of Laos’s GDP. Although China has appeared as a leading donor among both traditional and non-traditional donors in the last couple of decades, scholars (e.g., Bader, 2014; Bader, 2015b; Burnell, 2010; Diamond, 2008; Diamond, 2018; Kurlantzick and Link, 2009; Naim, 2007; Nathan, 2015; Sun, 2014; Zhang, 2006) critique its engagement on grounds of

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6 The calculation is based on data released by AidData (2017).

7 The calculation is based on data released by AidData (2017).

8 This calculation is based on available data provided by AidData (2017), but it needs to be noted that Chinese aid data in value terms is unavailable for 39 percent of Chinese aid projects. The actual amount therefore should be much higher than reported here.
diffusing authoritarianism -specifically in African recipients- through its economic and foreign policy tactics.

Extant literature suggests that foreign assistance from Western donors is guided by self-interest and political motives (Alesina and Dollar, 2000; Berthélemy, 2006; Dreher et al., 2008; Dreher, Nunnenkamp, and Thiele, 2008; Carter and Stone, 2015; Fuchs et al., 2015; Kuziemko and Werker, 2006; Kilby, 2011; Nunnenkamp and Thiele, 2006; Schraeder et al., 1998; Vreeland and Dreher, 2014). Among other things, donor countries are also interested in increasing the chance of recipient leadership survival (Bueno de Mesquita and Smith, 2007)\(^9\). Similar to Western aid, scholars suggest that self-interest and political motives also influence foreign aid allocation by emerging donors (Dreher et al., 2011; Dreher and Fuchs, 2015; Dreher et al., 2018; Neumayer, 2003; Semrau and Thiele, 2017). For instance, China prioritizes authoritarian states while setting and realizing its economic and geostrategic foreign policy goals (Bader, 2015b), and it often supports autocratic leaders by softening or blocking United Nations Security Council (UNSC) resolutions targeted at autocratic governments (Kleine-Ahlbrandt and Small, 2008). In February 2021, China blocked a UNSC statement that was proposed to condemn the military coup in Myanmar\(^{10}\). China also backed President Nicolas Maduro’s authoritarian regime in Venezuela by

\[^9\] Donors sometimes channel more aid during election years to incumbents who are more closely aligned to them (Faye and Niehaus, 2012). Furthermore, US aid had facilitated eastern European countries in democratization after the end of the Cold War. Similarly, US aid has also helped some autocratic allies (e.g., Egypt) to stabilize their regimes (Ahmed, 2016).

vetoing on a UNSC resolution calling for free election in the country. Additionally, Chinese economic diplomacy has deteriorated human rights and quality of governance condition in Sudan and Angola, and it has aided autocratic leaders in their countries to extend their time in office (Taylor, 2006).

Apart from studying the motives and determinants of Chinese official finance (e.g., Dreher et al., 2018), a growing body of literature investigates the economic (e.g., Bluhm et al., 2020; Cruzatti et al., 2020; Dreher et al., 2021; Martorano et al., 2020), environmental (e.g., Ben Yishay et al., 2016), and political effects (e.g., Brazys et al., 2017; Dreher and Fuchs, 2015; Dreher et al., 2018; Dreher et al., 2020; Isaksson and Kotzadam, 2016) of Chinese assistance. However, there are no studies, to the best of my knowledge, which investigates the potential consequences of Chinese development assistance for recipient leader turnover. In this study, I investigate whether Chinese development assistance helps recipient leaders stay in power. I particularly focus on whether Chinese aid’s effects on leader survival varies across democracies and non-democracies, and explain why the political effects of Chinese aid vary across regimes.

Extant literature (e.g., Ahmed, 2012; Bueno de Mesquita and Smith, 2010; Kono and Montinola, 2009; and Licht, 2010) has examined whether Western foreign aid props up recipient governments. However, the impact of Chinese foreign aid may differ from Western foreign aid.

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12 It was facilitated by the availability of Chinese official assistance data released by AidData and constructed by Bluhm et al. (2020), Dreher et al. (2021) and Strange et al. (2017a), among others.

13 Leader turnover refers to the removal of a head of the state from his or her position through elections defeats, impeachments, coups, and/or other means.
Chinese aid is different than Western aid from different perspectives. For instance, China attaches fewer conditions related to domestic policy reform (which is a common feature of Western aid), and emphasizes more on foreign policy related conditions (Chin and Gallagher, 2019; Dreher et al., 2018; Fuchs and Rudyak, 2019). Moreover, unlike Western donors, China mostly focuses on large scale infrastructure projects and often attaches conditions to procure project materials from Chinese state-owned industries, and employs Chinese engineers and workers in projects (Brautigam, 2009, 2010, 2011; Chin and Gallagher, 2019; Corkin, 2012; Davies, 2007; Gransow, 2015). The political impact of Chinese aid in recipient countries is therefore an area that requires to be explored.

In this chapter, I argue that Chinese aid enhances political survival of incumbents, and that the likelihood of leader survival is greater in non-democracies than democracies. My argument works thorough two mechanisms: (i) resource redistribution mechanism, and (ii) credit claiming mechanism, which I discuss in detail in the theory section of this chapter (section 2.3). I test my theoretical argument empirically using time series cross sectional data for 122 Chinese aid recipient countries over the period of 2000-2014. Empirical analyses suggest that (i) higher inflows of Chinese aid increases the likelihood of incumbent survival; (ii) Chinese aid is associated with longer tenures for leader in non-democracies, but it has no statistically significant effect on leader

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14 As Davies (2007, page 73) notes “Although China does not push for reforms in recipient countries, China does have some conditions in place on a project level that demand projects be executed by Chinese companies, and aid to be tied to the procurement of Chinese goods and services”.

15 Following extant literature (e.g., Bueno de Mesquita et al., 2003; DiGiuseppe and Shea, 2015, 2016), I use a broader classification of regime types – democracies and non-democracies, as opposed to categorizing regimes as democracies and autocracies.
survival in democracies.

This chapter makes several contributions to the burgeoning scholarship on Chinese aid. First, there are a few studies (e.g., Bader, 2015a; Dreher et al., 2019; Marx, 2017) that examine the political effects of Chinese aid. Moreover, a large number of scholars examine the effects of Western aid on leader turnover. However, no studies have yet examined the effects of Chinese aid on leader turnover. This is among the first cross-national analyses that examines the effect of Chinese aid on leader turnover. Similar to the literature on Western aid, this paper shows that Chinese aid has significant impact on leader turnover in recipient countries. Second, this paper implicitly contributes to literature that investigates whether China poses a challenge to the US-led liberal world order (e.g., Goddard, 2018; Ikenberry, 2011; Mazarr et al., 2018; Mearsheimer, 2014; Peng and Tok, 2016; Stuenkel, 2015; Yang 2016). My findings indicate that official finance from a rising power like China props up non-democratic leaders in recipient countries, which may pose threat to the sustenance and diffusion of fundamentals of the US-led liberal world order, such as upholding human rights, freedom of speech, and freedom of press.

The rest of this chapter is organized as follows. In the next section, I provide a brief review of literature connecting foreign aid and leader turnover. In section 2.3, I elaborate the theoretical argument, and derive two testable hypotheses. Section 2.4 provides a research design that includes conceptualization of dependent, independent, and control variables, as well as estimation strategies. Findings from empirical analysis are reported and discussed in section 2.5. Section 2.6 concludes and outlines some limitations of the study.
2.2. Review of Literature

Scholars have long argued that Western foreign aid helps corrupt and autocratic
governments stay in power (Bauer, 1972; Friedman, 1958). They point out that foreign aid is a
slack resource that governments can use discretionarily. Governments that face limited
accountability to their people often utilize foreign aid in unproductive activities, which albeit
generate political gains (Bauer, 1972; Friedman, 1958). A growing body of literature (e.g., Ahmed,
2012; Bueno de Mesquita et al., 2003; Bueno de Mesquita and Smith, 2010; Kono and Montinola,
2009; Licht, 2009; Smith, 2008) in recent years examines how Western foreign aid helps leaders
stay in power. These studies point out that foreign aid facilitates political survival in the following
manners: leaders use foreign assistance instead of tax revenue to placate citizens who prefer lower
taxes and more public and/or private goods (Bueno de Mesquita et al., 2003); higher provision of
public/private goods and lower taxes increase the bargaining power of leaders and help them
purchase loyalty from the ruling coalition (Ahmed, 2012; Bueno de Mesquita et al., 2003, 2010).

Bueno de Mesquita et al. (2003) provide a theory on leader survival, which is well known
as the selectorate theory\(^\text{16}\). In short, the theory suggests that unearned income such as foreign aid
helps leaders gain loyalty from their core support groups. This is because leaders use aid monies
to distribute greater amount of public goods in democracies and private goods in autocracies, hence
increasing the likelihood of political survival. Many scholars modify or extend the selectorate
theory to accommodate different perspectives of leader survival. For instance, Bueno de Mesquita
and Smith (2010) extend the selectorate theory by including revolutionary threats in the model.
They contend that leaders dissipate revolutionary threats either by expanding public goods that

\(^{16}\) An elaborated discussion of the model is provided in the next section.
improve social welfare and reduce incentive for revolution or by suppressing the supply of coordination goods (e.g., free press, transparency, and easy communication tools). Their theory suggests that foreign aid can be used to increase expenditure on repression and strengthen intelligence apparatus. Based on this argument, they suggest that foreign aid helps small coalition leaders in plummeting revolutionary threats and extends their stay in office.

In line with the selectorate theory, Ahmed (2012) argues that leaders maximize their probability of staying in power by optimally distributing private/patronage and public/welfare goods. He posits that governments redistribute these goods to their core supporters, business elites, military officials, organized labor groups, and majority of voters. The redistribution of rents, either in the form of welfare (e.g., public goods provision) and/or patronage (e.g., compensation to government employee) increase the likelihood of leader survival. In another study, Kono and Montinola (2012) posit that regimes with large coalitions such democracies tend to use aid for the provision of public goods such as health care and education, which enhances public well-being. On the other hand, small coalition regime such as autocracies tend to utilize aid to strengthen their repression capacity. Similarly, Morrison (2007, 2009) argues that foreign aid helps both democratic and non-democratic incumbents extend their tenure, as it helps incumbents lower the tax burden on elites in democracies, and facilitates higher levels of social spending in dictatorships. However, he adds that autocrats use foreign aid for co-optation and demobilization of interest groups and for fostering economic development, which extend their stay in office. Licht (2010) argues that since autocratic leaders have a small winning coalition, they are more likely to use foreign aid for private goods. In addition, since institutional checks are higher in democracies, and the winning coalition is large, democratic leaders are less able to use aid for personal utility maximization. Bader and Faust (2014) argue that due to fungible nature of foreign aid, donors
usually cannot deter autocrats from misusing these additional resources. Therefore, recipient governments often use foreign aid to redistribute additional rents to their winning coalition or to fund repression, leading to the continuation of the prevailing political structure.

Empirical literature finds mixed evidence on whether Western foreign aid helps in bolstering the tenure of democratic, non-democratic, or both types of leaders. Kono and Montinola (2009) find that Western foreign aid extends tenures of both autocrats and democrats, but the time horizons of this extension varies. They argue that continued foreign aid helps autocrats more than democrats in the long run because autocrats stockpile aid to use it in case of future negative shock. On the other hand, foreign aid helps democrats in the short run because larger stocks have lower marginal impact. Many scholars find evidence that foreign aid helps autocratic leaders stay in power longer than leaders in democracies. For instance, Bueno de Mesquita and Smith (2010) find that foreign aid assists leaders with small winning coalition in extending their tenure by facilitating stockpiling and provision of private payoffs to their selectorate. They also find that since democratic leaders have a large selectorate, distributing private goods is inefficient, and therefore aid monies cannot be used as efficiently as in autocratic regimes for political survival. Similar to Bueno de Mesquita and Smith (2010), Ahmed (2012), Carter (1995), and Licht (2010) also affirm that foreign aid props up autocratic regimes. In a more recent study, Bader and Faust (2014) review literature to identify the circumstances in which foreign aid be conducive to authoritarianism and democratization. They posit that “foreign aid mostly stabilizes the prevailing political structure” (Bader and Faust, 2014; page 576).

However, there are evidences that show foreign aid reduces support for incumbents. For instance, Briggs (2018) examines the effects of foreign aid on vote choice in three African countries - Senegal, Uganda, and Nigeria. He finds that receiving foreign aid is negatively related
to support for incumbent presidents. He explains that foreign aid may not meet voter expectations, and so citizens might lose trust in incumbents and vote against them. Similarly, Altincekic and Bearce (2014) contend that unlike oil, foreign aid is not a resource curse because it is less fungible, more conditional, and less consistent in supply than oil revenue.

Despite the availability of a large volume of research investigating leader survival effects of Western foreign aid, only a few studies explore this relationship with respect to Chinese aid. For example, Bader (2015a) examines whether China’s bilateral interactions increase stability of autocratic regimes. She includes Chinese aid along with other measures such as arms trading, economic cooperation, and export dependence on China to gauge bilateral interactions between China and other countries. Bader argues that autocratic major powers support nondemocratic regimes elsewhere to prevent the dominance of democratic major powers.

There are few other studies that analyze the effects of Chinese aid on the promotion of authoritarianism. For instance, Tseng and Krog (2017) examine the impact of Chinese aid on recipient country’s political institutions (e.g., democracy), conditional on the size of recipient country’s energy resources. The authors argue that Chinese aid allocation is guided by China’s energy needs, and therefore more aid is provided to energy-rich countries. Based on this argument, they hypothesize that energy resource exporting countries receive higher Chinese aid, with consequential promotion of authoritarian stability in the recipient states. Similarly, Dreher et al. (2019) show that Chinese aid helps authoritarian stability in Africa. They argue that since China does not conduct adequate cost-benefit analysis and vetting before approving their projects, recipient governments send more Chinese projects to their home regions for strengthening their hold on power. They find that in a context with high level of electoral competitiveness and looming election, African leaders demand for more Chinese project aid in their home regions with
expectations of electoral gains. This finding suggests that lack of project screening makes Chinese aid vulnerable to political capture and possible authoritarian stability.

Although there are a good number of studies examining leader survival effects of Western foreign aid, we have yet to investigate whether and how Chinese aid affects leader turnover in recipient countries. This chapter attempts to narrow the gap in literature by examining the impact of Chinese aid on leadership tenure in recipient countries and how the impact varies across democracies and non-democracies.

2.3. Chinese Aid and Leader Survival

Chinese aid may help recipient leaders strengthen their grips on power. In this chapter, I argue that despite the fact that non-democratic leaders generally tend to have longer tenures, Chinese aid helps both democratic and non-democratic leaders stay in office, but that the likelihood of staying in power is greater for non-democratic leaders. My argument works through two mechanisms. The first one is resource redistribution (or indirect) mechanism, and the second one is credit-claiming (or direct) mechanism. In the following sub-sections, I first lay down the arguments related to resource redistribution mechanism followed by arguments related to credit claiming mechanism. Based on these theoretical arguments, I derive two testable hypotheses towards the end of this section.

2.3.1. Resource Redistribution Mechanism of Leader Survival

Political leaders seek office, and when it is achieved, they seek to retain it for a longer period of time (Bueno de Mesquita et al., 2003; Lake and Baum, 2001; Wintrobe, 2001). However, leader survival depends on a key institutional feature - the size of the winning coalition, consisting of individuals whose support and loyalty is needed to gain and maintain power (Bueno de Mesquita
The size and composition of ruling coalition differ across political institutions. Democratic governments rely on support from majority of citizens, while non-democratic governments rely on a smaller fraction of citizens or social groups such as military, bureaucrats, oligarchs, and police forces and secret services. To increase the prospect of political survival and to earn and retain loyalty, both democratic and nondemocratic governments distribute benefits to their crucial support groups. When the support group is smaller and exclusive, which is common in non-democracies, leaders usually provide privileges through patronage and clientelism. On the contrary, when support group is large, leaders provide non-exclusionary public goods. In sum, for survival, non-democracies depend on small winning coalition and distribute private goods while democracies rely on larger winning coalition and distribute public goods (Bueno de Mesquita et al., 2003).

However, distribution of payoffs to respective winning coalition members needs resource generation. Governments in general obtain these resources both from earned (e.g., tax, fines) and unearned sources (e.g., natural resource rents, foreign aid, and remittance). Scholars have found that unearned income has important implications for leader turnover. For example, research finds that resource generation from natural resource rents such as oil revenue helps autocrats (Ahmed, 2012; Cuaresma, Oberhofer, and Raschky, 2011; Ross, 2001; Tsui, 2005; Ulfelder, 2007), and both autocratic and democratic leaders stay in power (Morrison, 2009; Smith, 2004). Similarly, resource generation from remittance also helps autocratic governments consolidate power (Ahmed, 2012). However, scholars find mixed evidence for the implications of resource generation from Western foreign aid. A group of scholars (e.g., Ahmed, 2012; Bauer, 1972; Cornel, 2012; Dietrich and Wright, 2015; Friedman, 1958; Licht, 2010; Morrison, 2007, 2011; Wright, 2009) find that Western foreign aid helps survival of autocratic leaders. Another group of scholars (Bader
and Faust, 2014; Bueno de Mesquita and Smith, 2010; Kono and Montinola, 2009) find that Western foreign aid assists leaders in both democracies and non-democracies in staying in office for a longer period. Based on this literature, I expect that Chinese aid has similar type of leader turnover effect, and it affects leader turnover for both democracies and non-democracies. However, the chances of retaining office is higher for non-democracies than democracies.

My arguments rely on a couple of assumptions. First, extant literature suggests that China most often does not channel any monies directly to recipient countries’ treasury (Brautigam, 2009, 2010; Davies, 2007; Dreher et al., 2018; Strange et al., 2017a). Instead, they usually provide money to their own contractors or companies for executing foreign aid projects. Consequently, I assume that although little or no money from Chinese aid goes into the recipient countries’ treasury, inflows of Chinese aid projects free up funds from host countries’ budget that governments can spend for other purposes. Second, extant literature suggests that Western aid tends to have more conditions related to domestic policies of the recipient country (e.g., Crawford, 2000; Hayman, 2011; Molenaers, Dellepiane, and Faust, 2015; Stokke, 1995), while Chinese aid seems to be tied with more conditions associated with foreign policy (e.g., Dreher et al., 2018; Chin and Gallagher, 2019; Fuchs and Rudyak, 2019; Pang and Wang, 2018; Strüver 2016), and

17 As Brautigam (2010, page 30) notes, “the Chinese almost never transfer any actual money through their loans, and only rarely give aid as cash grants.”

18 For example, in Bangladesh, the Padma Multipurpose Bridge is being partially financed by Chinese aid. In the absence of Chinese aid, the government of Bangladesh was partially funding the construction through domestic resource mobilization. Since China had started to provide funding for the project, Bangladesh government reallocated the reserved funds for other budgetary needs.
repaying the loans with commodity sales (Brautigam and Gallagher, 2014; Gallagher and Irwin, 2015). Since Chinese aid comes with fewer conditionalities associated with domestic policies compared to Western aid, I assume that both democratic and non-democratic incumbents have incentives to use the aid as a leverage to prolong their stay in office.

Relying on these “freed up resource” and “fewer domestic conditionality” assumptions, I argue that higher inflows of Chinese aid increases the likelihood of regime survival for both democratic and nondemocratic governments, but chances of incumbent survival is higher in non-democracies than in democracies. I build my argument grounding on the selectorate theory by Bueno de Mesquita et al. (2003). They assume that the primary goal of political leaders is to gain and retain power. To achieve their goals, leaders need support from a segment of the population, which is called the winning coalition (W). The size of the winning coalition varies across regime types. For example, it consists of a small group of elites in military juntas, and more than half the constituency in case of democracies. In order to retain office, incumbent leaders have to provide goods and services to members of the winning coalition to limit opposition of any kind or rebellion, and also for ensuring loyalty from them (Bueno de Mesquita et al., 2003). Hence, according to the selectorate theory, leaders maximize utility by efficiently distributing private goods and public goods among members of the winning coalition and other segments of the public. Private goods are distributed only among winning coalition members, whereas public goods are distributed among all citizens. Accordingly, I contend that nondemocratic incumbents use free resources, due to the leverage provided by higher inflows of Chinese aid, to placate their small winning coalition via patronage. In addition, they spend more money to suppress their challengers and prevent any revolutionary threats. Similarly, democratic leaders use freed up resources to increase public goods provision. Resource reallocation for respective winning coalitions is likely to increase the chances
of regime survival via plummeting revolutionary threats both in democracies and non-democracies (Bueno de Mesquita et al., 2003).

However, I expect that the likelihood of regime survival is higher in non-democracies than in democracies because of the following reasons. First, non-democratic leaders can divert aid money to private uses with more ease than their democratic counterparts, where institutional settings prevent leaders from using aid for personal interest (Bueno de Mesquita et al., 2003; Licht, 2010). In other words, converting aid money into private payoffs involve minimum costs in non-democracies. Because of considerably lower institutional impediments, non-democracies use additional resources more frequently for private goods provision, which in turn assist them in increasing their odds of survival. Second, individual-level utility from public goods is much smaller than utility from private goods, as benefits from public goods are diffuse in nature (Bueno de Mesquita et al., 2003). Since individuals have lower expected utility from public goods than private goods, I expect that higher provision of public goods facilitated by higher inflows of Chinese aid generates weaker loyalty than the distribution of higher amount of private goods. Based on these two reasons, I argue that Chinese aid is likely to bolster the tenure of non-democratic leaders more than the tenure of democratic leaders.

2.3.2. Credit Claiming Mechanism for Leader Survival

China predominantly provides project aid for construction of large scale infrastructure such as roads, bridges, railways, seaports, airports, power plants, electricity grids, and telecommunication systems, which are more visible and salient (Brautigam, 2009, 2011; Strange et al., 2013; Swedlund, 2017). Extant literature (e.g., Bader, 2015; Cruz and Schneider, 2017; Dreher et al., 2019; Harding and Stasvage, 2014; Marx, 2017) suggests that completion of projects
in visible sectors such as infrastructure and social services may help incumbents retain office. Visibility of externally funded projects can be beneficial for electoral gains as they can be used easily by politicians for undue credit-claiming. For instance, Cruz and Schneider (2017) show that by claiming credit for World Bank projects, incumbent mayors in the Philippines were reelected. Similarly, Marx (2017) finds that large and visible development projects (e.g., basic infrastructure and social services) funded by the World Bank yields incumbent survival in Sub-Saharan Africa. Grounding on this strand of literature, I argue that higher visibility of Chinese aid projects provides opportunities for credit claiming by incumbents in recipient countries, leading to higher likelihood of leader survival. However, despite both democratic and nondemocratic incumbents claim credit for Chinese aid projects, I expect democratic incumbents to be less successful in reaping electoral benefits from these infrastructure projects. Grounding on extant literature (e.g., De kadt and Lieberman, 2017; Briggs, 2019)\(^\text{19}\), I contend that as expected basket of goods is wider in democracies, citizens revise their expectations in upward direction after receiving some public goods and services. That is, the more goods and services they get, citizen expectations for receiving more goods and services increase. Hence higher provision of large and visible public goods such as roads, ports, etc. does not necessarily foster incumbent support in democracies.

\(^{19}\) De kadt and Lieberman (2017) find evidence that greater public service delivery (e.g., water and sewerage) does not bolster support for incumbents in four African democracies such as South Africa, Botswana, Lesotho, and Namibia.
Hypotheses

Grounding on the theoretical arguments discussed in the above two subsections, I formulate the following testable hypotheses.

**Hypothesis 1**: the higher the inflow of Chinese aid, the greater the likelihood of leader survival.

**Hypothesis 2**: the higher the inflow of Chinese aid, the greater the likelihood of leader survival in non-democracies than in democracies.

2.4. Research Design

The discussion in the previous section suggests that higher inflows of Chinese aid increases the odds of leader survival, and the effect varies across democracies and non-democracies. I test the hypotheses using time-series, cross-section data for a sample of 122 Chinese aid recipient countries over the period of 2000–2014. My unit of analysis is leader-year. I confine my analysis to the period of 2000-2014 because comprehensive data on Chinese aid provided by AidData is available only for these years. Table 2.1 provides the summary statistics of data I used in the study. The table indicates that a typical country received on average 2 Chinese projects worth of USD 191 million during the study period. A typical country’s per capita GDP is USD 3,599, leader’s age is 61 years, and on average, the leader stays in power for 7.8 years, with minimum of 1 month and maximum of 49 years (e.g., Fidel Castro). Out of the 122 Chinese aid recipient

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20 The list of sample countries is provided in appendix A2.1.

21 Although AidData has recently updated the non-geocoded version of Chinese aid data for the extended period of 2000-2017, it does not include an updated geocoded version of the same dataset. In my dissertation project, I utilize both geocoded and non-geocoded data. As both versions are available only for the period of 2000-2014, I stick to this time period for all of my analyses.
countries, 40 percent are from Africa, 16 percent from Latin America, 31 percent from Asia, 2 percent from the Pacific region, and 11 percent are Easter European countries. In the following sub sections, I describe the detailed procedures of my empirical analysis including the construction of dataset, conceptualization of dependent variable, independent variable, and control variables, in addition to estimation strategies.

Table 2.1: Summary Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs.</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader Exit</td>
<td>1771</td>
<td>.145</td>
<td>.352</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Number of Chinese Aid Project (lag)</td>
<td>1694</td>
<td>2.195</td>
<td>3.103</td>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>Per capita Chinese Aid (log, lag)</td>
<td>1557</td>
<td>1.092</td>
<td>1.542</td>
<td>0</td>
<td>7.18</td>
</tr>
<tr>
<td>Polity2 (lag)</td>
<td>1535</td>
<td>2.451</td>
<td>6.047</td>
<td>-10</td>
<td>10</td>
</tr>
<tr>
<td># of Chinese Project (L)* Polity 2 (L)</td>
<td>1535</td>
<td>4.7</td>
<td>19.512</td>
<td>-75</td>
<td>210</td>
</tr>
<tr>
<td>Per capita Chinese Aid (log, L)* Polity 2 (L)</td>
<td>1384</td>
<td>1.361</td>
<td>4.838</td>
<td>-13.077</td>
<td>15.017</td>
</tr>
<tr>
<td>DAC Foreign Aid (% GDP, lag)</td>
<td>1307</td>
<td>4.911</td>
<td>7.118</td>
<td>-.36</td>
<td>65.418</td>
</tr>
<tr>
<td>Natural Resource Rents (log, lag)</td>
<td>1621</td>
<td>1.916</td>
<td>1.147</td>
<td>0</td>
<td>4.471</td>
</tr>
<tr>
<td>Leader Age (log, lag)</td>
<td>1651</td>
<td>4.104</td>
<td>.179</td>
<td>3.401</td>
<td>4.5</td>
</tr>
<tr>
<td>Total Population (log, lag)</td>
<td>1454</td>
<td>16.206</td>
<td>1.54</td>
<td>12.512</td>
<td>20.971</td>
</tr>
<tr>
<td>GDP Growth Rate (lag)</td>
<td>1402</td>
<td>4.971</td>
<td>6.317</td>
<td>-62.076</td>
<td>123.14</td>
</tr>
<tr>
<td>Per capita GDP (log, lag)</td>
<td>1397</td>
<td>7.624</td>
<td>1.095</td>
<td>5.403</td>
<td>9.929</td>
</tr>
<tr>
<td>Civil War (lag)</td>
<td>1561</td>
<td>.027</td>
<td>.161</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

2.4.1. Dependent Variable: Leader Exit

My dependent variable *leader exit* is a dichotomous variable, which I construct by assigning 1 if any leadership change occurs in a country-year, and 0 otherwise. I obtain leader exit data from the Rulers, Elections, and Irregular Governance (REIGN) dataset\(^2\). My dataset contains 338 unique leaders across 122 countries over the period of 2000-2014. In my sample, 15 percent of country-years observe a leader exit.

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22 I also estimate my models using other leader turnover data such as Archigos (Goemans et al., 2009) and Licht (2020) and find consistent results with few exceptions.
2.4.2. *Independent Variable: Interaction between Chinese Aid and Political Regime*

I obtain Chinese aid data from Dreher et al. (2021) who have introduced AidData’s Global Chinese Official Finance Dataset, 2000-2014 (Version 1.0).\(^{23}\) The dataset provides Chinese official assistance\(^{24}\) data in two categories: (i) number of projects, and (ii) values of these Chinese projects in USD. In addition, AidData classifies Chinese aid into three categories: (i) Official Development Assistance (ODA), (ii) Other Official Flow (OOF), and (iii) Vague Official Flow (VOF).\(^{25}\) I construct Chinese aid variables by adding all of these categories, as I assume that differences in characteristics of these projects are inconsequential for leader turnover as commitments and disbursements of all of these projects are likely to ease recipients’ budget constraints and incentivize resource reallocation for political gains. However, as a robustness check, I test my hypotheses using OOF and ODA data separately and find more or less consistent results. In sum, I use two measures to conceptualize Chinese aid variables: (i) Chinese aid (ODA+OOF+VOF) measured in number of projects, and (ii) per capita Chinese aid (ODA+OOF+VOF) measured in constant 2014 USD.\(^{26}\)

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\(^{23}\) Dreher et al. (2021) provide a detailed procedure of the data generating process. They construct the dataset following Tracking Underreported Financial Flows (TUFF) methodology developed by Strange et al. (2017a, 2017b). The TUFF methodology relies on public information data available in newspapers, government and non-governmental documents, and various research reports by scholars (Dreher et al., 2017).

\(^{24}\) Throughout the paper I use the terms “Chinese aid” and “Chinese official assistance” interchangeably.

\(^{25}\) These projects cannot be categorized either as OOF or ODA because of inadequate open source information.

\(^{26}\) AidData’s Chinese aid data has some limitations. For example: (i) the dataset may overcount the number of projects as a result of not following projects from announcement to implementation. (ii) Some projects are included based on
I use the 21-point Polity2 scale to measure regime types\textsuperscript{27}. The variable is constructed by subtracting the polity autocracy score from the democracy score, and producing a range of values between -10 (strong autocracies) and 10 (highly institutionalized democracies). I obtain the Polity2 data from the Polity IV Project (Marshall, Gurr, and Jaggers, 2013). For the purpose of my study, following Ahmed (2012) and DiGiuseppe and Shea (2016), I consider countries with polity scores of -10 to 5 as non-democratic countries and countries with polity score of greater than 5 as democracies.

In my study, as discussed in previous section, I hypothesize that the effect of Chinese project aid on the likelihood of leader survival is higher in non-democratic regimes than in democratic regimes. Therefore, the statistical model for my analysis should incorporate a multiplicative interaction term to capture the effect of Chinese aid on leader survival. To construct the interactive terms I simply multiply the respective Chinese aid measures with the regime type variable.

\textsuperscript{27} As a robustness check, I use Boix et al. (2018) dichotomous measure of democracy and V-Dem’s regimes of the world measure of regime type. The findings of these measures are reported in Appendix (Table A2.2, Figure A2.1, Figure A2.2), which are consistent with my theory. Boix et al.’s (2018) dichotomous measure of democracy is coded by assigning 1 to a country if it is a democracy and 0 otherwise. On the other hand, V-Dem’s regimes of the world variable classifies world regimes into four categories: (i) closed autocracy (0), (ii) electoral autocracy (1), (iii) electoral democracy (2), and (iv) liberal democracy (3). For this study, 0 and 1 are considered as non-democracies and 2 and 3 are considered as democracies.
2.4.3. Control Variables

Following extant literature examining the effects of Western aid on leader survival (e.g., Ahmed, 2012; Kono and Montinola, 2009; Licht, 2010; Montinola, 2010), I control for variables that are most relevant for examining the effects of Chinese aid on leader turnover. Specifically, I control for leader age, per capita GDP, GDP growth rate, total population, DAC foreign aid, natural resource rents, and civil war. Exclusion of these variables may bias my estimates. I include leader age because older leaders are more likely to lose office. I obtain leader age data from the REIGN dataset (Bell, 2016). I include per capita GDP, and GDP growth rate because leaders in poor countries are more likely to experience removal in a given year. I obtain per capita GDP and GDP growth rate data from the WDI. I include a dummy for Civil War because domestic conflicts increase the likelihood of leader exit. I obtain Civil War data from the Correlates of War Project (Sarkees and Wayman, 2010). As most of the Chinese aid recipient countries also receive Western aid that may help leaders stay in power, I control for ODA flows from DAC countries, and I obtain DAC foreign aid data from the WDI. Finally, leaders use natural resources such as oil and gas as sources of “free rent”, which reduces their accountability and finance repression to consolidate power. Therefore, I control for natural resource rents in my models. I use natural resource rent as percentage of GDP and obtain data from WDI.

2.4.4. Estimation

I use a pooled cross-sectional approach, with a coverage of leaders from 122 Chinese aid recipient countries for the period of 2000 to 2014. As my dependent variable is dichotomous, I use
logistic regression model to estimate my coefficients\textsuperscript{28}. To address the potential simultaneity bias and for ensuring that my independent variable and control variables precede the dependent variable, following the tradition in extant literature (e.g., Ahmed, 2012; Dreher et al., 2021; Licht, 2010; Montinola, 2010), I take one year lag of all time-varying independent variables. Following Carter and Signorino (2010), I also use time polynomials to capture temporal dependency in leader tenure. In addition, I use robust standard errors to account for potential heteroscedasticity in the variables.

2.5. Findings

Table 2.2 reports the findings from my baseline models that test hypothesis 1, and Table 2.3 reports the findings from my interaction models that test hypothesis 2. Statistical analysis supports both of my hypotheses. Model 1 and Model 3 of the baseline models (Table 2.2) estimate bivariate relationship between leader exit and Chinese aid measured in number of projects and in value terms respectively. Chinese aid coefficients in both Model 1 and Model 3 are negative and statistically significant, indicating that higher inflows of Chinese aid reduce the likelihood of leader exit. Model 2 and Model 4 of the baseline models (Table 2.2) include all the control

\textsuperscript{28} An alternative approach would be the use of a duration model such as Cox proportional hazard model, and approximate a baseline hazard function (Box-Steffensmeier and Jones, 2004). However, following extant literature (e.g., Allen, Ferry, and Shammama, 2022), I prefer logistics regression for a couple of reasons. First, in case of time-series cross-section data, logistics and probabilistic models are treated as group duration data, where temporal dependency is controlled for on the right hand side of the model (Beck et al., 1998). Second, my key variables are driven by discrete observations over a limited time frame. Given the binary nature of my data, the use of cubic polynomial should be enough to generate a hazard shape similar to conventional duration models (Carter and Signorino, 2010).
variables. The coefficients for both of the Chinese aid variables – *No. of Chinese aid project* and *Per capita Chinese aid* in Model 2 and Model 4 are negative and statistically significant. This suggests that higher inflows of Chinese aid significantly reduces the likelihood of leader exit in recipient countries, holding all other variables constant.

Table 2.2: Chinese Aid and the Likelihood of Leader Exit, 2000-2014

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Chinese aid (count, # of projects)</th>
<th>Chinese aid (value, per capita)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Model 1</td>
<td>(2) Model 2</td>
</tr>
<tr>
<td>No. of Chinese Aid Project (lag)</td>
<td>-0.0621** (0.0275)</td>
<td>-0.0696** (0.0305)</td>
</tr>
<tr>
<td>Per capita Chinese Aid (log, lag)</td>
<td>-0.131** (0.0527)</td>
<td>-0.115* (0.0625)</td>
</tr>
<tr>
<td>Polity 2 (lag)</td>
<td>0.0673*** (0.0172)</td>
<td>0.0674*** (0.0175)</td>
</tr>
<tr>
<td>DAC Foreign Aid (% GDP, lag)</td>
<td>-0.0390 (0.0278)</td>
<td>-0.0396 (0.0271)</td>
</tr>
<tr>
<td>Natural Resource Rents (log, lag)</td>
<td>-0.113 (0.0947)</td>
<td>-0.105 (0.0946)</td>
</tr>
<tr>
<td>Leader Age (log, lag)</td>
<td>1.587*** (0.539)</td>
<td>1.495*** (0.536)</td>
</tr>
<tr>
<td>Total Population (log, lag)</td>
<td>-0.0797 (0.0637)</td>
<td>-0.105 (0.0651)</td>
</tr>
<tr>
<td>GDP Growth Rate (lag)</td>
<td>-0.00692 (0.0363)</td>
<td>-0.00833 (0.0362)</td>
</tr>
<tr>
<td>Per capita GDP (log, lag)</td>
<td>-0.329** (0.136)</td>
<td>-0.285** (0.132)</td>
</tr>
<tr>
<td>Civil War (lag)</td>
<td>1.129*** (0.416)</td>
<td>1.169*** (0.411)</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.992*** (0.620)</td>
<td>-4.635 (2.863)</td>
</tr>
<tr>
<td>Observations</td>
<td>1,654</td>
<td>1,247</td>
</tr>
</tbody>
</table>

*Notes: Dependent variable is leader exit. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.*
Figure 2.1: Probability of Leader Exit (Derived from Model 2) with 95% CIs

Figure 2.2: Probability of Leader Exit (Derived from Model 4) with 95% CIs
Figure 2.1 depicts the probability of leader exit across different number of Chinese aid projects, derived on the basis of Model 2 (Table 2.2) with 95% confidence intervals, and holding all other variables constant at their mean. The figure suggests that for example, an additional Chinese aid project decreases the probability of leader exit by 5.8%, holding all other variables constant at mean levels. Similarly, the addition of five Chinese aid projects decrease the probability of leader exit by 21.4%, holding all other variables constant at their mean. Figure 2.2 depicts the probability of leader exit for different values of per capita Chinese aid (measured in natural log), based on Model 4 (Table 2.2), and holding all other variables constant at their mean value. The figure suggests that for example, with an increase in per capita Chinese aid by 1 unit (from .1 to .2), probability of leader exit decreases by 1%, holding all other variables constant at mean levels. Similarly, with an increase in per capita Chinese aid by 10 unit (from .1 to 1), probability of leader exit decreases by 8.6%, holding all other variables constant at mean levels. The coefficients of Chinese aid variables – No. of Chinese aid projects and Per capita Chinese aid - in Table 2.2 and Figure 2.1 and Figure 2.2 support hypothesis 1 that higher inflows of Chinese aid reduces the likelihood of leader exit in recipient countries.

Figure 2.3 and Figure 2.4 present the conditional marginal effects of Chinese aid on leader exit, based on Model 1 and Model 2 of interaction models reported in Table 2.3, holding all other variables constant at their mean. These figures confirm hypothesis 2 that Chinese aid reduces the likelihood of leader exit more in non-democracies than in democracies. More specifically, Figure 2.3 shows the conditional marginal effects of a one unit change in Chinese aid (measured as number of Chinese aid projects) on the probability of leader exit, with 95 percent confidence

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29 The likelihood of leader survival increase as more Chinese aid projects come to the recipient countries.
intervals, across different values of polity scores, holding all other variables constant at their mean. Similarly, Figure 2.4 shows that the interactive effect of Chinese aid (measured in value terms - per capita Chinese aid) on the probability of leader exit with 95 percent confidence intervals, across different values of polity scores, holding all other variables constant at their mean. Both figures indicate that Chinese aid significantly reduces the likelihood of leader exit for non-democracies.

Table 2.3: Chinese Aid, Regime Type, and the Likelihood of Leader Exit, 2000-2014

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th></th>
<th>(2)</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 1</td>
<td>Model 2</td>
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<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>No. of Chinese Aid Project (lag)</td>
<td>-0.122***</td>
<td></td>
<td>-0.210**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0389)</td>
<td></td>
<td>(0.0882)</td>
<td></td>
</tr>
<tr>
<td>Per capita Chinese Aid (log, lag)</td>
<td>0.210**</td>
<td></td>
<td>0.0463**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0882)</td>
<td></td>
<td>(0.0198)</td>
<td></td>
</tr>
<tr>
<td>Polity 2 (lag),</td>
<td>0.0391*</td>
<td>0.0463**</td>
<td>0.0463**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0206)</td>
<td></td>
<td>(0.0198)</td>
<td></td>
</tr>
<tr>
<td># of Chinese Project (L)* Polity 2 (L)</td>
<td>0.0141**</td>
<td></td>
<td>0.0226*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00618)</td>
<td></td>
<td>(0.0122)</td>
<td></td>
</tr>
<tr>
<td>Per capita Chinese Aid (log, L)* Polity 2 (L)</td>
<td>0.0141**</td>
<td></td>
<td>0.0226*</td>
<td></td>
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<tr>
<td></td>
<td>(0.00618)</td>
<td></td>
<td>(0.0122)</td>
<td></td>
</tr>
<tr>
<td>DAC Foreign Aid (% GDP, lag)</td>
<td>-0.0386</td>
<td>-0.0382</td>
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</tr>
<tr>
<td></td>
<td>(0.0276)</td>
<td>(0.0266)</td>
<td>(0.0276)</td>
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</tr>
<tr>
<td>Natural Resource Rents (log, lag)</td>
<td>-0.121</td>
<td>-0.102</td>
<td>-0.121</td>
<td>-0.102</td>
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<tr>
<td></td>
<td>(0.0944)</td>
<td>(0.0941)</td>
<td>(0.0944)</td>
<td>(0.0941)</td>
</tr>
<tr>
<td>Leader Age (log, lag)</td>
<td>1.588***</td>
<td>1.518***</td>
<td>1.588***</td>
<td>1.518***</td>
</tr>
<tr>
<td></td>
<td>(0.536)</td>
<td>(0.530)</td>
<td>(0.536)</td>
<td>(0.530)</td>
</tr>
<tr>
<td>Total Population (log, lag)</td>
<td>-0.0762</td>
<td>-0.0971</td>
<td>-0.0762</td>
<td>-0.0971</td>
</tr>
<tr>
<td></td>
<td>(0.0637)</td>
<td>(0.0651)</td>
<td>(0.0637)</td>
<td>(0.0651)</td>
</tr>
<tr>
<td>GDP Growth Rate (lag)</td>
<td>-0.00755</td>
<td>-0.00836</td>
<td>-0.00755</td>
<td>-0.00836</td>
</tr>
<tr>
<td></td>
<td>(0.0357)</td>
<td>(0.0352)</td>
<td>(0.0357)</td>
<td>(0.0352)</td>
</tr>
<tr>
<td>Per capita GDP (log, lag)</td>
<td>-0.317**</td>
<td>-0.274**</td>
<td>-0.317**</td>
<td>-0.274**</td>
</tr>
<tr>
<td></td>
<td>(0.135)</td>
<td>(0.131)</td>
<td>(0.135)</td>
<td>(0.131)</td>
</tr>
<tr>
<td>Civil War (lag)</td>
<td>1.144***</td>
<td>1.155***</td>
<td>1.144***</td>
<td>1.155***</td>
</tr>
<tr>
<td></td>
<td>(0.418)</td>
<td>(0.406)</td>
<td>(0.418)</td>
<td>(0.406)</td>
</tr>
<tr>
<td>Constant</td>
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<td>-4.433</td>
<td>-4.684*</td>
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<tr>
<td></td>
<td>(2.843)</td>
<td>(2.817)</td>
<td>(2.843)</td>
<td>(2.817)</td>
</tr>
<tr>
<td>Observations</td>
<td>1.247</td>
<td>1.247</td>
<td>1.247</td>
<td>1.247</td>
</tr>
</tbody>
</table>

Notes: Dependent variable is leader exit. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Figure 2.3: Conditional Effects of Chinese Aid (count, # of projects) on Leader Exit

Figure 2.4: Conditional Effects of Chinese Aid (value, per capita) on Leader Exit
My statistical analyses also provide expected results for control variables. For example, I find that coefficients for leader age, per capita GDP, and civil war have expected signs and are statistically significant for all of the specifications. The statistically significant positive coefficient of leader age indicates that the higher the age of a leader, the greater the likelihood of his exit from office. Similarly, statistically significant negative coefficients of per capita GDP indicate that the higher the income of the people, the lower the odds of leader exit. Finally, civil war coefficients indicate that occurrence of civil war increases the likelihood of leader exit.

2.6. Conclusion

This chapter examines whether and how Chinese foreign aid affects the likelihood of leader survival in recipient countries. I propose two mechanisms for how Chinese aid possibly affects the likelihood of leader survival. Based on the selectorate theory, I argue that higher inflows of Chinese aid help leaders redistribute resources among respective winning coalitions, which earns loyalty from the winning coalition and lowers revolutionary threat, hence a higher likelihood of leader survival. Secondly, I contend that credit claiming for large scale Chinese aid projects helps leaders stay in power. However, I expect that impact of Chinese aid on leader survival is greater in non-democracies than democracies because of a couple of reasons. First, as non-democracies have fewer institutional barriers to prevent misuse of foreign aid monies, leaders have a greater incentive to use aid money more intensively for political survival. This increases the likelihood of longer leadership tenure in non-democracies more than in democracies. Second, as individual-level utility from public goods is much smaller than utility from private goods, higher provision of public goods generates lower loyalty than distribution of greater amount of private goods. Therefore, I argue that Chinese aid prolongs the tenure of non-democratic leaders more than their democratic counterparts.
Empirical analyses based on a novel Chinese aid dataset constructed by Dreher et al. (2021) for the period of 2000-2014 support my hypotheses. I find that Chinese aid (measured both in terms of number of projects and in value terms) is likely to reduce the likelihood of leader exit, but the effect varies across non-democracies and democracies. I find that Chinese aid significantly increases the odds of leader survival for non-democracies, however, it does not have any statistically significant leader turnover effect for democracies.

The findings of this study may help foreign aid scholars better understand the political effects of aid from emerging donors. As emerging donors like China are advocating for “non-interference” and principles of “South-South cooperation”, it is essential to understand the revealed effects of their assistance on the domestic politics of recipient countries. The findings of this study suggest that Chinese aid may extend the tenure of non-democratic leaders. Promotion of non-democratic leaders might challenge the stated objectives of OECD-DAC donors such as the promotion of democratic institutions and democratic norms. In addition, higher likelihood of non-democratic leader survival due to Chinese aid may have important implications for sustenance and propagation of civil liberties such as freedom of speech, freedom of press, and freedom of association in Chinese aid recipient states.

An important limitation of this study relates to availability of data on Chinese foreign aid. My findings are based on unofficial data on Chinese aid, which are constructed by relying on public information data available in newspapers, government and non-governmental documents, and various research reports by scholars. Any future release of official data by the Chinese government, and/or arrival of new data generated by other scholars from other sources may be helpful in reexamining the hypotheses proposed in this study and also enable cross checking the validity of my findings.
CHAPTER 3: CHINESE AID AND SOCIAL SECTOR SPENDING: THE ROLE OF RECIPIENT POLITICAL INSTITUTIONS

3.1. Introduction

Foreign assistance can influence domestic budgetary allocations in recipient countries, with potential implications for fiscal spending in the social sector. Recipient governments often change the composition of public spending in response to inflows of aid funds (Chatterjee et al., 2012; Feyzioglu et al., 1998; Marc, 2017; Werker et al., 2009; World Bank, 1998). However, the extent and magnitude of fiscal adjustments in relation to foreign assistance vary significantly. Some studies (e.g., Feyzioglu et al., 1998; Marc, 2017; Werker et al., 2009; World Bank, 1998) find evidence that foreign aid reduces public spending in recipient countries. Other works (e.g., Morrissey, 2015; Remmer, 2004; van de Walle and Mu, 2007) find that foreign aid increases public spending. There is also evidence that foreign aid does not have any effect on public spending (Gomanee et al., 2005a).

One of the key channels through which Western foreign aid affects recipient countries’ development outcomes relates to government expenditures on social sector30 (e.g., Chatterjee et al., 2012; Gomanee et al., 2005b; Mosley et. al., 2004; World Bank, 1998). Recipient governments may reduce own budgetary allocations for sectors that receive foreign aid and transfer resources

30 Social sector includes health, education, water and sanitation, housing, social welfare, rural infrastructure, and agricultural research, training and extension, where government spending is considered to be pro-poor (Gomanee et al., 2005a; Verschoor, 2002).
to other sectors. For example, when governments receive foreign aid for transport or energy sector, they may contract domestic budgetary allocation for these sectors and transfer free resources to other sectors such as health, education, and social welfare. Additionally, whether a government spends more resources for welfare enhancing sector depends on a country’s political institutions (e.g., Avelino et al., 2005; Brown and Hunter, 2004; Kaufman and Segura-Ubiergo, 2001; Rudra and Haggard, 2001).

Although there exists a wide scholarship on the fiscal effects of Western foreign aid in recipient countries, we know little about the effects of Chinese aid on recipient governments’ fiscal behavior. China has emerged as a leading source of development finance for low and middle income countries in the past couple of decades. Correspondingly, Chinese official assistance is criticized for emphasizing on commercial projects, natural resource acquisition, and geopolitical strategies (Davies, 2007; Hapler, 2010; Naim, 2007; Tull, 2006). Empirical evidence shows that China’s massive involvement in international development cooperation is driven by particular motives such as improving its status in the international world order and influencing global governance (Fuchs and Rudyak, 2017), enhancing alliances with developing countries, promoting south-south cooperation, and securing support from aid recipient countries in international organizations (Davies, 2007; Pehnelt, 2007), influencing international development norms (Abdenur, 2014), and realizing its ‘one China policy’ (Brautigam, 2009; Taylor, 1998). Critics also claim that China finances “white elephant projects” and often allocates money to projects that have lower potential for improving individual level well-being of people in recipient countries.

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31 Throughout the paper I use the terms “Chinese aid” “Chinese assistance” and “Chinese official assistance” interchangeably.
However, effect of Chinese aid on economic growth and human development in recipients is not entirely unsatisfactory, as evidences in prior works in the field suggest. Previous works find that Chinese aid reduces interregional economic inequality (Bluhm et al., 2020) and infant mortality rate (Cruzatti et al., 2020), accelerates economic growth (Dreher et al., 2017), and improves educational level (Martorano et al., 2020) in recipient countries. Notwithstanding the positive effects of Chinese foreign aid in host countries, the mechanism through which Chinese aid affects economic development and individual level well-being is yet to be explored. Drawing on literature on the fiscal effects of foreign aid and the mediating role of political institutions, I intend to examine the effect of Chinese aid on social sector spending in recipient countries. More specifically, I intend to examine whether the impact of Chinese aid on public spending on social sector is contingent upon the host country’s political institutions, by focusing on recipient country regime type. Specifically, I examine the following question: Does Chinese aid increase social sector spending more in democracies than in non-democracies?

I propose that Chinese aid frees up money from the host country’s budget, and utilization of these freed up resources depends on the type of regime (democracy or non-democracy) in place. Grounding on the selectorate theory by Bueno de Mesquita et al. (2003), I contend that Chinese assistance is likely to increase social sector spending more in democracies than in non-democracies. In democracies, governments use freed up money for improving the well-being of its citizens. As democratic leaders need votes to be reelected and want to minimize public dissatisfaction that may jeopardize their tenure, they reallocate greater amount of freed up money for social sector spending (e.g., health, education, and welfare programs). Higher public spending in social sectors reduces the risk of public agitation, and assists leaders to be reelected. On the
other hand, in non-democracies, leaders use freed up money to distribute private goods to their small winning coalition (W), rather than increasing public spending in the social sector. Therefore, greater inflows of Chinese aid to non-democracies is more likely to increase non-developmental expenditure such as government consumption (spent on increasing salaries and benefits of government spending) and military spending (when a military leader holds the power).

Broadly, this chapter tries to contribute to the growing body of literature that examines Chinese aid’s economic impact on recipient countries. In particular, the chapter adds a new dimension to the impact assessment literature on Chinese aid by analyzing its effect on recipient governments’ fiscal behavior from a political economy perspective. Findings from this study is expected to provide new insights on the effectiveness of Chinese aid in improving human development related outcomes. As social sector spending develops human capital, reduces poverty, and improves overall living standard (Bose et al. 2007; Aisa and Pueyo 2006), resource reallocation to social sector due to the leverage provided by Chinese aid is likely to improve social welfare in Chinese aid receiving countries.

The rest of this chapter is organized as follows. In the next section, I provide a brief review of literature connecting foreign aid and social sector spending. In section 3.3, I elaborate the theoretical argument, and derive a testable hypothesis. Section 3.4 provides a research design that includes conceptualization of dependent, independent, and control variables, as well as estimation strategies. Findings from empirical analysis are reported and discussed in section 3.5, and section 3.7 concludes the chapter.
3.2. Literature Review

The effectiveness of foreign aid in engendering economic development and reducing poverty depends on how efficiently foreign aid is used by the recipient countries. Aid fungibility literature suggests that Western foreign aid money is often diverted to other uses. Owing to inflows of foreign aid, recipient governments may expand defense budget, cut tax, raise social sector spending, and/or reduce borrowing from other internal and external sources (Cashel-Cordo and Craig, 1990). Western aid reduces governments’ tax collection effort and increases government consumption (Boone, 1996; Cashel-Cordo and Craig; 1991; Gang and Khan, 1991; Heller, 1975; McGuire, 1987). Special interest groups or lobbyists may also engage in rent-seeking activities to divert aid from its designated uses (Svensson, 2000; Lahiri and Raimondos-Moller, 2004), and sometimes force governments to use aid money as leverage to reduce tax (Adam and O’Connell, 1999). In response, recipient governments divert Western aid monies to areas that are politically more rewarding for them (Bueno de Mesquita and Smith, 2009; Easterly, 2009; Gibson et al., 2005; Morrison, 2007).

Discourse on the issue of fungibility is as old as foreign aid. For instance, Devarajan et al. (1999) quoted Paul Rosenstein-Rodin, Deputy Director of the WB’s Economics Department in 1947, who said in 1947 that ‘When the World Bank thinks it is financing an electric power station, it is really financing a brothel’. According to the World Bank (1998, page 66), “Fungibility means that a government can use increased resources as it chooses - to increase spending, fund tax cuts, or reduce the fiscal deficit (reducing future taxes).” There is huge literature that examines fungibility of Western foreign aid (e.g., Alvarez et al., 2016; Boone, 1996; Brown, 2012; Devarajan et al., 1999; Ekman and Metell, 1993; Farag et al., 2009; Feyzioglu et al., 1998; Gupta et al., 2003; Hegan and Hatlebakk, 2002; Khilji nad Zampelli, 1994; Pack and Pack, 1990, 1993, 1998; Petersson, 2007; Swaroop et al., 2000; and World Bank, 1998). These studies find strong evidence that suggests Western foreign aid is fungible.
However, higher inflows of Western aid may also increase public spending in sectors which promote economic growth and human development in recipient countries. For instance, Mosley et al. (2004) find evidence that Western aid increases “pro-poor” and health spending in the 46 countries they studied over the 1990s. They also find that the spending contributes to lowering infant mortality rate and reduces headcount poverty in the sample of countries being studied. Similarly, Gomanee et al. (2005b) find that Western aid is associated with higher social sector spending, and this spending is associated with higher social welfare. They suggest that Western aid encourages recipient governments to finance public expenditures that are more likely to benefit the poor. In addition, Iqbal (1997) finds that Western aid increases education and health spending in Pakistan. Similar to these studies, Morrissey (2009) contends that aid is an important factor that increases social sector spending in poor countries. However, he claims that when a country gets richer, the use of aid in increasing or maintaining social sector spending decreases.

In contrast, studies also find that Western aid may displace social sector spending in recipient countries and does not contribute to human development. For instance, Farag et al. (2009) examine whether Western aid for health displaces recipient governments’ spending for health sector. They find that in low income recipient countries, greater donor funding for health sector is associated with lower spending in healthcare. Similarly, Alvarez et al. (2016) examine whether development assistance for health reduces recipient governments’ contribution to health expenditure. They find that the Tanzanian government shifts its own funds that had been previously dedicated for health sector to other sectors. In the same way, Gomanee et al. (2005a) find no evidence that Western aid increases aggregate welfare through an expansion of public sector spending. Rather than increasing investments targeted at pro-poor development, recipient countries use aid to amplify government consumption expenditure (Boone, 1996). In India,
resources that became available due to foreign aid are found to be mostly spent on non-developmental activities (Swaroop et al., 2000). Similarly, in Malawi, experimental evidence shows that politicians are more interested in shifting public spending to other sectors corresponding to inflows of foreign aid (Seim et al., 2020).

The pattern of spending on social sector in relation to foreign assistance also varies across recipients. Recipient governments with larger winning coalition are more likely to utilize an influx of foreign aid towards economic development and improvement of citizen welfare than governments with smaller winning coalitions (Smith, 2008). As democracies have stronger institutional constraints on executive power, they tend to pursue more welfare enhancing and economic growth promoting policies than dictatorships (Dutta et. al., 2013; Rudra and Haggard, 2001).

Moreover, the quality of recipient political institutions can influence the pattern of domestic expenditure by the incumbent. Democratic governments are more likely to spend in social sector than autocratic governments due to electoral incentives and interest group pressures (Adsera and Boix, 2002; Brown and Hunter, 2004; Kaufman and Segura, 2001; Rudra and Haggard, 2001). Quality of political institutions significantly increases social sector spending in Latin America, particularly on sectors that boost human capital formation such as health, education, and social security (Avelino et al., 2005). Similarly, Kaufman and Segura-Ubiergo (2001) find evidence that democracies spend more money on health and education than nondemocracies.

From the above review, it is evident that extant literature has explored the impact of Western foreign aid on recipient governments’ fiscal decisions. However, despite the fact that
China has emerged as a leading source of bilateral foreign assistance in the last two decades, there is dearth of literature on the fiscal implications of Chinese aid for recipient country’s budget. This chapter aims to narrow the gap by examining the impact of Chinese aid on social sector spending across regime types.

3.3. Chinese Aid, Political Institution, and Social Sector Spending

Similar to Western foreign aid, Chinese development assistance may also affect fiscal decisions of recipient countries. In this paper, I argue that higher inflows of Chinese aid frees up resources for recipient countries’ treasury to be allocated for alternative uses. These freed up resources can be used either for increasing public spending in social sectors (e.g., health, education, and welfare programs), or for distributing private goods, depending on host country’s regime type. In the following paragraphs, I discuss my theoretical argument and derive a testable hypothesis.

Chinese development assistance is usually allocated through projects and in-kind support, and cash budgetary grants is uncommon. Chinese aid literature suggests that China usually provides money directly to their own contractors or companies for administering foreign aid

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33 My calculation from AidData’s Global Chinese Official Finance Dataset, 2000-2014 (Version 1.0) indicates that globally, Chinese aid flows have grown fourteen fold during 2000-2014 (the amount has increased from 2.56 billion in 2000 to 36.46 billion in 2014). In addition, on average, during 2000-2014, Chinese aid accounted for 0.86 percent of a typical recipient country’s GDP.

34 For example, in Bangladesh, the Padma Multipurpose Bridge is being significantly financed by Chinese assistance. In the absence of Chinese finance, the government of Bangladesh was partially funding the construction through domestic resource mobilization. Since China had started to provide funding for the project, Bangladesh government reallocated the reserved funds for other budgetary needs such as increasing the subsidy for agriculture and widening the coverage of social safety net.
projects (Braudigam, 2009, 2010; Strange et al., 2017a; Dreher et al., 2018). Contrary to Western donors, China usually does not send aid funds to accounts controlled by recipient countries. Moreover, China rarely provides cash aid as budgetary support. As Brautigam (2010) notes, “the Chinese almost never transfer any actual money through their loans, and only rarely give aid as cash grants. Keeping the money in China, with payments to Chinese companies and their subcontractors authorized by the borrowing government, actually aids in avoiding large-scale embezzlement, although kickbacks might still take place” (page 30)35. In this study, I argue that although little or no money from Chinese development assistance goes into the recipient countries’ treasury, inflows of Chinese aid projects free up money from host countries’ budget that governments can spend for other purposes.

The spending decision on freed up resources is guided by the nature of the host state’s political institution. I argue that democratic governments spend freed up money in social sector to increase provision of public goods (e.g., health, education, and welfare programs). By contrast, in non-democracies, leaders use the freed up money predominantly for distributing private benefits. More specifically, I argue that the impact of Chinese aid on fiscal decisions of recipient countries differs across regime types. In democracies, Chinese aid increases social sector spending, whereas in non-democracies, Chinese aid stimulates spending for private goods.

I build my argument based on the selectorate theory formulated by Bueno de Mesquita et

35 However, Brautigam (2009, page 142) also notes that “There are exceptions. For creditworthy governments like Botswana or Mauritius, with good economic environments and low risk, the Eximbank can issue the loan directly to the borrowing government. These institutions would then collect repayment, and service the debt to Eximbank. For less creditworthy governments, such as Sudan or Angola, the Eximbank disburses the loan directly to a Chinese enterprise or joint venture, believing this can better guarantee its productive use, and thus repayment.”
al. (2003). The selectorate theory assumes that the primary goal of political leaders is getting elected and staying in power. To achieve their goals, leaders need support from a segment of the population, which is called the winning coalition (W). The size of the winning coalition varies across regime types. For example, it consists of a small group of elites in military juntas and more than half the constituency in case of democracies. In order to stay in power, leaders have to provide goods and services to their winning coalition, which limits opposition or any kind of dissatisfaction among the winning coalition, in addition to ensuring loyalty from them (Bueno de Mesquita et al., 2003).

Hence, according to the selectorate theory, leaders maximize utility by efficiently distributing private goods or public goods among the winning coalition and other segments of the public. Private goods are distributed only among the winning coalition, whereas public goods, on account of their non-excludable nature, are enjoyed by most citizens. Since the cost differential between private goods and public goods is high, leaders with larger coalition allocate resources differently than leaders with smaller winning coalition. In case of small winning coalitions (e.g., military junta, autocracy), leaders only need support of a few individuals, whereas in larger winning coalitions (e.g., democracies), leaders need to retain support from a larger number of people. In case of a larger winning coalition, governments allocate more on the social sector, and larger segment of the public receives transfers from the government. As a result, public support for a democratic leader remains strong. On the other hand, when leaders have a smaller winning coalition, the level of social expenditure is lower, and few individuals receive private benefits from

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36 Politicians maximize their chances of reelection and therefore constituency preferences are important constraints in their policy choices (Mayhew, 1974).
the government. In short, democratic states provide greater volume of public goods and spend more on social sector (e.g., health, education, and welfare programs) compared to autocracies, where leaders spend on private goods provision to placate restricted groups of people for maintaining office.

Scholarship on political institutions and fiscal spending also attest to the implications of the selectorate theory (e.g., Adsera and Boix, 2002; Avelino et al., 2005; Brown and Hunter, 2004; Kaufman and Segura-Ubiergo, 2001; Lake and Baum, 2001; Nooruddin and Simmons, 2006; Rudra and Haggard, 2001). These scholars argue that democracies allocate greater funds to social programs than autocracies due to electoral and interest group pressures. As opposed to autocracies, democratic leaders face greater pressure from mass constituency to deliver social goods and services than autocracies, which motivates them to spend more on social sector budget (Kaufman and Segura-Ubiergo, 2001). There is empirical evidence that shows democracies allocate larger budget on primary education (Brown and Hunter, 2004). The authors explain the pattern of allocation by pointing out that spending of democratic leaders aim at benefitting largest number of potential voters. Other scholars contend that by design, democratic governments spend a larger fraction of their revenue to provide public goods (Acemoglu and Robinson, 2006). Therefore, democratic governments in general allocate more resources than non-democracies to social sectors. On the other hand, non-democratic governments use aid to provide patronage benefits to government employees by increasing their wages and reducing social welfare expenditures (Ahmed, 2012).

In sum, based on the above discussion, I argue that inflows of Chinese aid projects entail freed up resources from host countries’ budget that governments can spend for different purposes. The spending decision of freed up resources is guided by the quality of the host state’s political
institutions. Grounding on the selectorate theory, I argue that democratic governments are more likely to spend freed up funds for distribution of public goods, while non-democratic governments are more likely to spend it on distributing private goods among members of their winning coalition. As democratic leaders need votes to be reelected, they reallocate freed up money to social sectors (e.g., health, education, and welfare programs). Higher public spending on social sectors that benefits largest segment of the polity improves the democratic incumbent’s reelection prospect. On the other hand, in autocracies, leaders primarily use freed up money to distribute private goods, rather than increasing public spending in the social sector to serve the needs of the common mass.

Based on the theoretical arguments discussed above, I formulate the following testable hypothesis.

**Hypothesis 1**: the higher the inflows of Chinese aid, the greater the social sector spending in democracies than in non-democracies.

### 3.4. Research Design

I test the hypothesis using time-series, cross-section data for a sample of 122 Chinese aid recipient countries over the period of 2000–2014\(^{37}\). My unit of analysis is country-year. For representing social sector spending, I utilize three measures: government health expenditure (% of GDP), government education expenditure (% of GDP), and government total social sector expenditure (% of GDP). I confine the analysis to the period of 2000-2014, because comprehensive data on Chinese aid provided by AidData is available only for these years. Table 3.1 provides a summary statistics of data I use for the analysis. The table indicates that Chinese aid comprises 0.84 percent of GDP of a typical recipient country in a given year. In addition, a typical recipient

\(^{37}\) The list of sample countries is provided in appendix A3.1.
government spends 2.19% of its GDP on the health sector, 3.87% on education sector, and 6.07% on total social sector. The average polity score of the sample is 2.49 during the study period. In the following sub sections, I describe the detailed procedures of my empirical analysis including the construction of dataset, conceptualization of the dependent variable, independent variable, and control variables, in addition to estimation strategies.

Table 3.1: Summary Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs.</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Govt. Health Expenditure (% of GDP)</td>
<td>1033</td>
<td>2.189</td>
<td>1.691</td>
<td>.037</td>
<td>24.775</td>
</tr>
<tr>
<td>Govt. Education Expenditure (% of GDP)</td>
<td>1036</td>
<td>3.868</td>
<td>2.25</td>
<td>.171</td>
<td>14.727</td>
</tr>
<tr>
<td>Govt. Total Social Sector Spending (% of GDP)</td>
<td>1033</td>
<td>6.065</td>
<td>3.538</td>
<td>.278</td>
<td>31.011</td>
</tr>
<tr>
<td>Chinese Aid (% of GDP, lag)</td>
<td>1496</td>
<td>.841</td>
<td>3.458</td>
<td>0</td>
<td>102.221</td>
</tr>
<tr>
<td>Polity2</td>
<td>1647</td>
<td>2.49</td>
<td>6.03</td>
<td>-10</td>
<td>10</td>
</tr>
<tr>
<td>DAC Foreign Aid (% GDP)</td>
<td>1398</td>
<td>4.869</td>
<td>7.063</td>
<td>-.36</td>
<td>65.418</td>
</tr>
<tr>
<td>Total Population (log)</td>
<td>1557</td>
<td>16.215</td>
<td>1.541</td>
<td>12.512</td>
<td>20.982</td>
</tr>
<tr>
<td>GDP Growth Rate</td>
<td>1502</td>
<td>4.899</td>
<td>6.197</td>
<td>-62.076</td>
<td>123.14</td>
</tr>
<tr>
<td>Remittance (% GDP)</td>
<td>1237</td>
<td>.994</td>
<td>1.894</td>
<td>0</td>
<td>18.612</td>
</tr>
<tr>
<td>Nat. Resource Rents (% GDP)</td>
<td>1488</td>
<td>8.415</td>
<td>4.592</td>
<td>.005</td>
<td>20.264</td>
</tr>
<tr>
<td>Time</td>
<td>1815</td>
<td>8</td>
<td>4.322</td>
<td>1</td>
<td>15</td>
</tr>
</tbody>
</table>

3.4.1. Dependent Variable: Social Sector Spending

My dependent variable is government social sector spending. Following extant literature (e.g., Chatterjee et al., 2012; Feyzioglu et al., 1998), I use three different measures to represent social sector spending. These are: government health expenditure, government education expenditure, and government total social sector expenditure. I measure all of the three variables as percentage of GDP as suggested by extant literature (e.g., Chatterjee et al., 2012; Feyzioglu et al., 1998). For calculating total public spending on social sector, I simply add government health expenditure and government education expenditure measured as percentage of GDP. I obtain data for these three variables from the International Food Policy Research Institute (IFPRI). The IFPRI (2015) has developed a database titled Statistics on Public Expenditures for Economic
Development (SPEED), which has a wider sectoral coverage and less missing values than the data available at other sources such as the WDI database\textsuperscript{38}.

3.4.2. Independent Variable: Interaction between Chinese Aid and Polity Scores

As I examine the effect of Chinese aid on social sector spending conditional on regime type, my key choice variable is an interaction term, constructed by interacting Chinese aid variable with the regime type variable. I obtain Chinese aid data from Dreher et al. (2021) who have introduced AidData’s Global Chinese Official Finance Dataset, 2000-2014 (Version 1.0)\textsuperscript{39}. AidData classifies Chinese aid into three categories: (i) Official Development Assistance (ODA), (ii) Other Official Flow (OOF), and (iii) Vague Official Flow (VOF)\textsuperscript{40}. While constructing the Chinese aid variable, I include all of these categories as I assume that Chinese development assistance frees up monies for recipient countries treasury and incentivizes resource reallocation for political gains, regardless of the type of Chinese foreign aid. In addition, Chinese aid data is available both with respect to number of projects and value terms of these projects. As I am interested in examining the fiscal implications of Chinese aid, I use Chinese aid data measured in value terms only. Moreover, following extant literature (e.g., Ahmed, 2012; Chatterjee et al., 2012; SPEED obtains data from the IMF Government Financial Statistics (GFS), which is supplemented with data from the World Bank’s Public Expenditure Reviews, and various in-country or national sources including national budget documents, statistical abstracts, and account generals’ offices (IFPRI, 2015).\textsuperscript{38} Dreher et al. (2021) provide a detailed procedure of the data generating process. They construct the dataset following Tracking Underreported Financial Flows (TUFF) methodology developed by Strange et al. (2017a, 2017b). The TUFF methodology relies on public information data available in newspapers, government and non-governmental documents, and various research reports by scholars (Dreher et al., 2017).\textsuperscript{39} These projects cannot be categorized either as OOF or ODA because of inadequate open source information.\textsuperscript{40}

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I construct Chinese aid variable as percentage of the recipient country’s GDP measured in constant 2014 USD.

For measuring quality of political institutions, I consider regime type of recipient countries. I use the 21-point Polity2 scale, constructed by subtracting the polity autocracy score from the democracy score, and producing a range of values between -10 (strong autocracies) and 10 (highly institutionalized democracies). I obtain the Polity2 data from the Polity IV Project (Marshall, Gurr, and Jaggers, 2013). Finally, to construct the interaction variable, I simply multiply Chinese aid variable with the polity scores.

3.4.3. Control Variables

Most Chinese aid recipients also receive Western foreign aid. Separating the effects of Western aid is thus important to get unbiased estimates. Therefore, I control for Western foreign aid in my models. For this purpose, I obtain DAC foreign aid data from WDI that are reported as net official development assistance and official aid received (constant 2015 USD). In my analysis, DAC aid is expressed as percentage of GDP of recipient countries. Apart from Western foreign aid, following extant literature (e.g., Boone, 1994; Chatterjee, Giuliano, and Kaya; 2012; Feyzioglu, Swaroop, and Zhu, 1998; McGuire, 1978), I include a number of economic and social indicators of recipient countries as control variables in my main regression model. For example, I control for a couple of unearned government incomes such as natural resource rents (measured as % of GDP), and remittance (measured as % of GDP), as they are considered to be important determinants of social sector spending in a country (Ahmed, 2012). Similarly, I control for total population and GDP growth rate, as exclusion of these variables may bias my estimates. I take the natural log of total population for normalizing the distribution of the data and for eliminating
outliers. I obtain data on total population, natural resource rents, remittance, and GDP from the WDI DataBank.

3.4.4. Estimation

I construct a time-series cross-sectional dataset where country-year is the unit of analysis. I apply fixed effect OLS method to estimate my regression coefficients. Fixed effect estimators account for systematic, unobserved country level heterogeneity that possibly exists in my models. To address the potential simultaneity bias and for ensuring that my choice variables precede the dependent variable, following the tradition in extant literature (e.g., Remmer 2004), I take one year lag of Chinese aid variable. Finally, I assume that time trend can potentially affect both my choice variables and outcome variables. Therefore, I control for trend by incorporating a time variable in each of my models.

3.5. Findings

Table 3.2 reports the findings from my empirical analysis. I estimate three different models for each of my dependent variables. The first model (Model 1, Model 4, and Model 7) estimates bivariate relationship between Chinese aid and respective dependent variable. The second model (Model 2, Model 5, and Model 8) estimates the bivariate relationship between regime type and respective dependent variables. The third model (Model 3, Model 6, and Model 9) is the full model.

41 It should be noted here that as social sector spending is sticky, a group of scholars prefer to use autoregressive distributed lag (ADL) models to capture the effects of choice variable on social spending. However, as I use data on Chinese aid commitments rather than actual disbursement data, I assume that the commitments influence the budgetary decision-making calculus of borrowers. Hence Chinese aid commitments in a given year affect borrowers’ decision to change social spending in the next budget cycle.
which includes the interaction term between Chinese aid and regime type, along with all the control variables I discussed in the above sub-section. The estimated Chinese aid coefficients in Model 4 and Model 7 suggest that higher inflows of Chinese aid significantly increases public expenditure on education and social sector spending in recipient countries. The estimated polity2 coefficients in Model 2, Model 5, and Model 8 indicate that higher polity scores significantly increase a country’s health, education, and social sector expenditures. This finding suggests that democratic countries allocate more resources for health, education, and overall social sector.

The goal of my empirical analysis is to investigate whether the effect of Chinese aid on recipient governments’ social sector spending is contingent upon a recipient country’s regime type. Plotting marginal effects of Chinese aid across different values of polity scores would provide evidence on whether government social sector spending varies across regimes due to Chinese aid (Brambor et al., 2006). Therefore, I plot conditional effects of Chinese aid on government social sector spending in Figures 3.1 to 3.3. More specifically, Figure 3.1 plots conditional effects (estimated from Model 3) of Chinese aid on government health expenditure. The figure shows the marginal effect of Chinese aid (with 95 percent confidence intervals) on government health expenditure for different values of polity scores. Figure 3.1 indicates that the interactive effect of Chinese aid on government health expenditure is statistically significant for democracies (with polity score ranging from 6 to 10) except for one (polity score 6), but insignificant for non-democracies (with polity score ranging from -10 to 5). This indicates that government health expenditure due to Chinese aid significantly varies across democracies and non-democracies - higher inflows of Chinese aid increases government health expenditure more in democracies than in non-democracies.

Figure 3.2 shows the average marginal effects of Chinese aid (with 95 percent confidence
intervals) on government education expenditure for various values of polity scores, which indicates that the interactive effect (derived from of Model 6) of Chinese aid on education expenditure is statistically significant for all types of democracies (with polity score ranging from 6 to 10). However, the interactive coefficients are negative and statistically insignificant for non-democracies, suggesting that Chinese aid does not affect government education expenditure in non-democratic recipient countries. Figure 3.3 shows the marginal effect of Chinese aid (with 95 percent confidence intervals) on government total social sector expenditure for different values of polity scores. The figure indicates that the interactive effect of Chinese aid on total social sector expenditure is statistically significant for democracies (with polity score ranging from 6 to 10) except for one (polity score 6), but insignificant for all non-democracies (with polity score ranging from -10 to 5). This suggests that government’s total social sector expenditure due to Chinese aid significantly varies across democracies and non-democracies. More specifically, higher inflows of Chinese aid increases government social sector spending more in democracies than in non-democracies. In short, the findings reported in Figure 3.1 to Figure 3.3 support my hypothesis that the higher the inflows of Chinese aid, the greater the social sector spending in democracies than in non-democracies.

I checked robustness of my findings by using a dichotomous measure for polity. The binary polity2 variable is constructed by assigning 0 for non-democracies (measured for the polity scores of -10 to 5), and by assigning 1 for democracies (measured for the polity scores of 6 to 10). The results are consistent with the main analysis, except for health sector expenditure, which I report in the appendix (Table A3.1 and Figure A3.1-A3.3).
### Table 3.2: Chinese Aid, Regime Type, and Social Sector Spending, 2000-2014

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Health Expenditure (% of GDP)</th>
<th>Education Expenditure (% of GDP)</th>
<th>Total Social Exp. (% of GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Chinese Aid (% of GDP, lag)</td>
<td>0.129 (0.0945)</td>
<td>-0.00649 (0.0217)</td>
<td>0.0459** (0.0220)</td>
</tr>
<tr>
<td>Polity2</td>
<td>0.0301** (0.0126)</td>
<td>0.0213 (0.0141)</td>
<td>0.0441** (0.0178)</td>
</tr>
<tr>
<td>Chinese Aid (% of GDP, lag)* Polity2</td>
<td>0.00465* (0.00267)</td>
<td>0.0131*** (0.00478)</td>
<td>0.0177** (0.00711)</td>
</tr>
<tr>
<td>DAC Foreign Aid (% GDP)</td>
<td>0.0462*** (0.0164)</td>
<td>0.0233 (0.0254)</td>
<td>0.0626 (0.0381)</td>
</tr>
<tr>
<td>Total Population (log)</td>
<td>-2.601*** (0.876)</td>
<td>-4.265*** (0.822)</td>
<td>-7.086*** (1.233)</td>
</tr>
<tr>
<td>GDP Growth Rate</td>
<td>-0.00895 (0.0947)</td>
<td>-0.0191* (0.0111)</td>
<td>-0.0282* (0.0165)</td>
</tr>
<tr>
<td>Remittance (% GDP)</td>
<td>-0.0845 (0.0639)</td>
<td>-0.111 (0.0675)</td>
<td>-0.196* (0.100)</td>
</tr>
<tr>
<td>Nat. Resource Rents (% GDP)</td>
<td>0.0471 (0.0319)</td>
<td>-0.00566 (0.0331)</td>
<td>0.0412 (0.0492)</td>
</tr>
<tr>
<td>Time</td>
<td>0.0663*** (0.0185)</td>
<td>0.0767*** (0.0164)</td>
<td>0.144*** (0.0244)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.949*** (0.0534)</td>
<td>44.09*** (14.40)</td>
<td>3.855*** (0.0349)</td>
</tr>
<tr>
<td>Overall $R^2$</td>
<td>0.042</td>
<td>0.24</td>
<td>0.001</td>
</tr>
<tr>
<td>Observations</td>
<td>784</td>
<td>650</td>
<td>786</td>
</tr>
</tbody>
</table>

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Figure 3.1: Conditional Effects of Chinese Aid on Govt. Health Expenditure (with 95% CIs)

Figure 3.2: Conditional Effects of Chinese Aid on Govt. Education Expenditure (with 95% CIs)
3.6. Conclusion

In this chapter, I examine the effect of Chinese aid on social sector spending contingent upon recipient country regime type. Grounded on the selectorate theory, I argue that Chinese aid frees up resources for recipient countries’ treasury, which can be used either for expanding public spending in social sector or for distributing private goods, depending on the type of political institution in place in host countries. Empirical analysis based on time series cross sectional data for 122 Chinese aid recipient countries indicates that higher inflows of Chinese aid increases social sector spending in democracies. However, higher inflows of Chinese aid does not have any statistically significant effect on social sector spending in non-democracies.

The diverse impact of Chinese aid on social sector spending across democracies and non-
democracies may have different implications for individual level well-being in recipient countries. Higher public spending for health sector is likely to improve health outcomes (such as reducing malaria incidence rate, maternal mortality, and infant mortality) of citizens in democracies, and it is also likely to reduce head-count poverty in the long run. Although existing studies (e.g., Abdenur 2014; Brautigam, 2009; Davies, 2007; Fuchs and Rudyak, 2017; Hapler, 2010; Naim, 2007; Pehnelt, 2007; Taylor 1998; Tull, 2006) suggest that China emphasizes on providing majority of its assistance to commercial, geo-political, and natural resource extraction related projects, findings from this study indicate that Chinese aid may contribute to improving human development via changing governments’ fiscal allocation decisions. In brief, findings from this chapter suggest that Chinese aid is more likely to improve human development outcomes in democracies than in non-democracies, a proposition I empirically test in the next chapter (Chapter 4) of my dissertation.

My empirical analyses in this chapter is based on unofficial data on Chinese aid, which are constructed by relying on public information data available in newspapers, government and non-governmental documents, and various research reports by scholars. Any future release of official data by Chinese government, and/or availability of new data generated by a novel process by other scholars may be helpful in re-examining the hypothesis proposed in this study and cross-check the validity of my findings.
CHAPTER 4: CHINESE FOREIGN AID AND INDIVIDUAL LEVEL WELL-BEING: THE ROLE OF RECIPIENT POLITICAL INSTITUTIONS

4.1. Introduction

China is extensively engaged in development financing through its multi-billion dollar Belt and Road Initiative, and it has recently emerged as the largest source of bilateral development finance (Ray et al., 2021). The stated objective of Chinese foreign aid is to reduce poverty and improve livelihood of citizens in developing countries, especially those in Least Developed Countries (State Council, 2014). However, Chinese development assistance is criticized for being motivated by self-interest and for emphasizing natural resource extraction, investment returns, and geopolitical strategies (Tull, 2006; Davies, 2007; Naim, 2007; Hapler, 2010).

There is criticism surrounding the observation that China finances “white elephant projects” and often allocates money to projects that have lower potential for improving individual level well-being of people in recipient countries (Naim, 2007). Examples of projects that generally garner attention of critics include construction of ports in areas that are geopolitically important for China (e.g., Hambantota in Sri Lanka) but lacks potential to contribute to recipient economies, building stadiums in a highly indebted poor country (e.g., Tanzania) or in a war-torn country (e.g., Sierra Leone), and constructing bridges in natural resource-rich countries (e.g., Angola) that help China serve its own economic interest. Scholars find evidence that China’s massive involvement in international development cooperation involves particular motives such as improving its status in the international world order and influencing global governance (Fuchs and Rudyak, 2017),
enhancing alliances with developing countries, promoting south-south cooperation, and securing support from aid recipient countries in international organizations (Davies, 2007; Pehnelt, 2007), influencing international development norms (Abdenur, 2014), and realizing its ‘one China policy’ (Brautigam, 2009; Taylor, 1998).

A large body of literature investigates the impact of Western foreign aid on economic and human development outcomes in the recipient countries. These studies find mixed evidence of the effectiveness of Western foreign aid in reducing poverty and improving individual level well-being (Easterly, 2003; Galiani et al. 2017; Qian, 2015). Some scholars (e.g., Banerjee, 2007; Sachs, 2005; Sen, 2006) suggest that Western foreign aid saves lives of millions through immunization, reduces child and maternal mortality, and helps in increasing life expectancy in poor countries. However, many other scholars (e.g., Easterly, 2001; Chen and Ravallion, 2004; Doucouliagos and Paldam, 2009; Easterly, 2006b; Easterly and Pfutze, 2008; Moyo 2009; Rajan and Subramanian, 2008) find evidence to the contrary, and they are skeptical about Western aid’s effectiveness in improving individual well-being.

Given China’s intensified involvement in development finance activities in recent years, scholars are interested in assessing its effects on economic development and individual level well-being in the recipient countries. As China is not transparent in aid allocation and official aid data are not readily available, it has been difficult to analyze the impact of Chinese development assistance on recipient countries until recent times. However, recent releases of Chinese development assistance data by AidData have made it possible for a number of scholars (e.g., Brazys and Vadlamannati, 2020; Bluhm et al., 2020; Cruzatti et al., 2020; Dreher et al., 2017; Martorano et al., 2020) to investigate the effects of Chinese development assistance both at
aggregate and disaggregate levels. Studies that examine the effect of Chinese development assistance find both positive and negative effects in recipient countries. Positive effects include lower levels of interregional economic inequality (Bluhm et al., 2020), higher economic growth (Dreher et al., 2017), lower infant mortality rate (Cruzatti et al., 2020), and improved education (Martorano et al., 2020) in recipient countries. On the other hand, deleterious effects include a rise in local corruption (Brazys et al., 2017; Isaksson and Kotsadam, 2018), higher spatial income inequality (Xu et al., 2020), and environmental degradation (Ben Yishay et al., 2016). Although these studies examine the effects of Chinese development assistance both at the individual and aggregate levels, they have yet to consider domestic political factors in recipient states that can mediate the impact of Chinese development assistance.

There is a strand of Western foreign aid literature that claims that the effect of foreign aid depends on a host of domestic political factors ranging from recipient political institutions to their quality of governance. Examples of these factors include good policies and effective institutions (Burnside and Dollar, 2000; Collier and Dollar, 2002), totalitarian government (Islam, 2003), policy and warfare (Collier and Hoeffler, 2002), and economic freedom (Ovaska, 2003). Following this strand of literature, I intend to examine whether the impact of Chinese development assistance on individual level well-being is contingent upon the host country’s political institutions, by focusing on the regime type of the recipient country. Specifically, I intend to examine the following question: Does Chinese development assistance have a greater positive effect on individual well-being in democracies than in non-democracies?

I propose that despite emphasizing commercial, geo-political, and natural-resource extraction related projects, Chinese development assistance is likely to improve individual level
well-being if recipient countries have democratic governments in power\textsuperscript{43}. I posit that Chinese development assistance frees up money from the host country’s budget, and use of these freed up resources depends on the type of regime (democracy or non-democracy) in place. Grounding on the selectorate theory by Bueno de Mesquita et al. (2003), I argue that in democracies, governments use freed up money for improving the well-being of its citizens. As democratic leaders need votes to be reelected and want to minimize public dissatisfaction that may jeopardize their tenure, they reallocate greater amount of freed up money for social sector spending (e.g., health, education, and welfare programs). Higher public spending in social sectors reduces the risk of public agitation, and helps leaders get reelected. But more importantly, it improves the well-being of individual citizens. On the other hand, in non-democracies, leaders use freed up money to distribute private goods to their small winning coalition (W), rather than increasing public spending in the social sector. Therefore, greater inflows of Chinese development assistance to autocracies is less likely to improve well-being at the individual level. In sum, I argue that despite focusing on commercial, geo-political, and natural resource extraction related projects, Chinese development assistance is likely to improve individual level well-being, given that recipient countries have democratic institutions in place.

This chapter examines the impact of Chinese foreign aid on individual level well-being, focusing on malaria prevalence rate contingent upon recipient countries’ regime types. Specifically, I investigate (i) whether Chinese aid reduces malaria incidence rate at the household level, and (ii) whether the rate of prevalence differs across regime types. The study utilizes

\textsuperscript{43} I discuss the underlying assumptions of my arguments in the theory and hypothesis section.
subnational level geocoded Chinese development assistance data available from AidData, and multiple rounds of geocoded Demographic and Health Survey data available from AReNA’s DHS-GIS Database44. The essay would add to the political economy of aid effectiveness literature. Specifically, the essay contributes to the burgeoning Chinese development assistance literature by showing how democracies can make Chinese development assistance more effective in improving individual level well-being, despite China’s emphasis on financing commercial, geo-political, and natural-resource extraction related projects.

The rest of this chapter is organized as follows. In the next section, I provide a brief overview on the relationship between foreign aid and public health outcomes emphasizing on the case of malaria eradication. In section 4.3, I elaborate the theoretical argument, and derive a testable hypothesis. Section 4.4 provides a research design that includes conceptualization of dependent, independent, and control variables, as well as estimation strategies. Findings from empirical analysis are reported and discussed in section 4.5. Section 4.6 reports findings from robustness checks, and section 4.7 concludes the chapter.

4.2. Foreign Aid, Public Health Outcomes, and the Case of Malaria Eradication

This section discusses the relationship between foreign aid and public health outcomes, focusing on the effect of foreign aid on malaria eradication in developing countries. The section also identifies a gap in literature on the effect of Chinese foreign aid on public health outcomes.

44 The database is available online through the following sources: https://www.ifpri.org/blog/115-million-children-122472-communities-57-countries-30-years-new-dataset(combines-demographic https://www.ifpri.org/publication/arenas-dhs-gis-database
4.2.1. Western Foreign Aid and Public Health Outcomes

A large volume of work examines the effect of Western foreign aid on public health outcomes (e.g., maternal mortality, infant mortality, HIV/AIDS, tuberculosis, and malaria). Even though both foreign aid and public health outcomes have moved in a positive direction in the last couple of decades, there is a debate on whether the improvement in public health outcomes are brought about by higher foreign aid (Quibria, 2010; Rajan, 2005).

Studies that examine the effects of aggregate Western foreign aid on public health outcomes provide inconclusive results. Some scholars find that Western foreign aid significantly improves public health outcomes. For instance, Gormanee et al. (2005) find that foreign aid reduces infant mortality rates and people from lower income groups are more benefitted by foreign aid than their counterparts. Similarly, few other scholars (e.g., Arndt et al., 2014; and Dalgaard and Hansen, 2014) find that Western aid reduces infant mortality rate, and it improves nutrition. In the same vein, De and Becker (2015) examine the effect of Western foreign aid on the prevalence and severity of diarrhea, and they find that Western aid significantly contributes in reducing both the prevalence and severity of diarrhea. In another study, Sachs (2014) argues that in the last thirteen years, foreign aid for public health has increased significantly. Consequently, public health conditions in the aid recipient countries have advanced remarkably. He also argues that the creation of public health institutions such as the Global Fund to Fight AIDS, Tuberculosis, and Malaria has significantly contributed to increase the effectiveness of the delivery of public health aid. Therefore, public health outcomes have improved significantly.

However, many scholars also find no evidence for the role of aggregate Western foreign aid in improving public health outcomes. For instance, Williamson (2008) finds negligible effect
of Western health aid on various health outcomes including infant mortality rate. Similarly, Boone (1996), Gomanee et al. (2005), and Kosack and Tobin (2006) find no evidence of the impact of Western aid in reducing infant mortality or increasing life expectancy. Easterly (2003) also finds that Western foreign aid does not have any positive impact on development outcomes including health, and he suggests that the results do not change even if good governance and/or policy environment is considered in the analysis. Stuckler, McKee, and Basu (2013) argue that existing studies that find positive effect of aggregate Western aid produce biased results because of methodological weakness associated with these studies.

Unlike the inconclusive results regarding the impact of overall/aggregate Western aid on public health outcomes, empirical evidence regarding the effects of health aid on public health outcomes is relatively more conclusive. A large number of scholars (e.g., Afridi and Ventelou, 2013; Bendavid and Bhattacharya, 2014; Feeney and Ouattara, 2013; Mishra and Newhouse, 2009; and Taylor et al., 2013) find evidence that health aid improves health outcomes. Gyimah-Brempong (2015) provides a detailed description of how these studies are conducted. For example, some studies focus on the general impact of aggregate health aid, and impact of health aid on public health outcomes at the disaggregated level and the project level (Kosack, 2003; Ndikumana and Pickbourn, 2017; Salami et al., 2014). Mishra and Newhouse (2009) investigate the relationship between health aid and infant mortality, and they find that an increase in the size of health aid significantly reduces infant mortality in aid recipient countries. Specifically, they find that a rise in per capita health aid by USD 1.6 per year is likely to lead to 1.5 fewer infant deaths per thousand births.

Scholars also try to understand why health aid is more effective than overall aid to improve
health related outcomes. Moullon (2013) explains that health aid (especially technical aid) attracts doctors to stay in their home countries and provide health services, which improves health outcomes. Biesman et al. (2009) and Muldoon et al. (2011) suggest that health aid reduces infant and maternal mortality rate by improving health systems in recipient countries.

However, some studies find that health aid does not improve infant and maternal mortality, and it does not have any impact on life expectancy (Kizhakethalackal et al., 2013; Mukherjee and Kizhakethalackal, 2013; and Wilson, 2011). Based on empirical analyses, some scholars (e.g., Gyimah-Brempong, 2015; Mishra and Newhouse, 2007, 2009) suggest that health aid only marginally improves public health outcomes in the recipient countries. In a more recent study, Wilson (2011) examines the impact of Western health aid on health outcomes, but he does not find any impact of health aid on various health related indicators such as infant mortality, child mortality, and life expectancy at birth. His results show that countries that received greater size of health aid do not perform better in reducing mortality than countries receiving lower amount of aid. Similarly, Irfan and Nehra (2016) examine the effects of Western health aid on infant mortality rate and the effects of aid for water and sanitation on urban sanitation facilities in Southeast Asian countries for 2002-2012. Their analysis indicates that developmental aid is not useful in reducing infant mortality and improving sanitation facilities.

Apart from examining the direct effects of Western foreign aid on health outcomes, scholars also explore the mitigating role of institutions in recipient countries (e.g., Burnside and Dollar, 2000; Chauvet, Farag et al., 2013; Fielding, 2011; Gubert and Mesple-Somps, 2013; Hu and Mendoza, 2013; and Verschoor and Kalwij, 2006). For instance, Doucouliagos et al. (2019) examine the impact of Western health aid on infant mortality contingent on governance quality in
96 recipient states. They focus on analyzing the impact of good governance on health aid effectiveness. They find that health aid reduces infant mortality by 4 percent conditional on a one standard deviation improvement in government effectiveness. Dietrich (2011) finds that even corrupt governments effectively use Western health aid, and consequently health aid has significant impact on health outcomes such as immunization. She argues that recipient countries are more interested to comply with health aid related conditionality than any other types of aid. In another study, Gyimah-Brempong (2015) examines the effect of Western health aid on public health outcomes in African countries for the period of 1990-2012. He finds that health aid improves public health outcomes in African countries, and the effects are stronger for countries with better governance and higher domestic health expenditure.

Similar to studies on the effects of health aid, works analyzing the impact of Western foreign aid on public health outcomes at the household level provide conclusive results. These studies examine the impact of Western aid on different types of public health outcomes including infant mortality (Kotsadam et al., 2018), perceived healthcare quality (De and Becker 2015; Marty et al., 2017), and disease burden and severity (Odokonyero et al., 2018). These works also cover a wide range of countries such as Nigeria (Kotsadam et al., 2018), Malawi (De and Becker, 2015; Marty et al., 2017), and Uganda (Odokonyero et al., 2018). Recently, Wayoro and Ndikumana (2019) conduct a micro-level analysis to show the impact of Western development aid on infant mortality in Cote d’Ivoire. To assess the micro level effects of aid on infant mortality, they combine World Banks’ (WB) geo-coded aid project data with three rounds of DHS (Demographic and Health Surveys) from Cote d’Ivoire and apply difference-in-differences estimation techniques. Wayoro and Ndikumana (2019) find lower infant mortality in the areas located near the WB aid
projects. They argue that greater access to prenatal and postnatal health care in regions with WB
projects may help reduce infant mortality.

Odoikeyo et al. (2016) also examine the effect of Western health aid on public health
outcomes in Uganda. They combine household panel data with geocoded foreign aid data and
apply difference-in-differences techniques to measure the impact. They find that aid helps to
shorten disease recovery time and thus reduces productivity burden of disease, but it is less
effective in reducing disease prevalence. Moreover, they find that health aid is more effective for
people living nearby aid projects. Their study suggests that aid was not allocated to areas with
worst health conditions. Using geocoded data in combination with living standard data, De and
Becker (2015) examine the impact of Western health, water, and education aid in Malawi. They
find that health aid reduces severity of diseases, water aid decreases incidence of diarrhea, and
education aid increases school enrollment in Malawi.

The literature on Western foreign aid and public health outcomes broadly suggests that
Western aid is more effective in improving public health outcomes when it is allocated to specific
health projects. Nevertheless, the effect of overall aid on public health outcomes is also not
negligible.

4.2.2. Western Foreign Aid and the Eradication of Malaria

Malaria is a tropical parasitic disease that is transmitted through the bite of an Anopheles
mosquito. Malaria is considered to be one of the main causes of avoidable deaths in low-income
countries (WHO, 2001). Scholars note that malaria imposes substantial economic burden in
addition to having catastrophic health consequences for those affected by the disease (Sachs,
2014).
Malaria is regarded as one of the key public health challenges for low and middle income countries, and especially for Sub-Saharan African states. In 2019, the world experienced 229 million cases of malaria incidence, and about 409,000 people died due to malaria during the year (UNSTATS, 2021). Moreover, the WHO notes that “In 2020, nearly half of the world's population was at risk of malaria. Some population groups are at considerably higher risk of contracting malaria and developing severe disease: infants, children under 5 years of age, pregnant women and patients with HIV/AIDS, as well as people with low immunity moving to areas with intense malaria transmission such as migrant workers, mobile populations and travelers.” Malaria is also identified as one of the most important causes of child mortality. According to the WHO, children under 5 accounted for an estimated 80 percent of all malaria deaths in Sub-Saharan Africa.

WHO (2001) reports that high malaria prevalence reduces economic growth by at least 1 percent each year in low-income countries. In addition, there is an annual loss of about 5.8 per cent of GNP in the Sub-Saharan Africa due to malaria. Nations without a malaria risk grow at least one percentage point more rapidly per year than countries with high risk of malaria (WHO, 2001). Malaria is considered to be devastating because it imposes risks to all individuals who live in a particular location regardless of demographic disparities, and the disease reduces overall productivity in the regions.

The United Nations’ global 2030 agenda for sustainable development under the sustainable development goals (SDGs) include various targets to improve public health outcomes. One of the important targets set by the United Nations under the SDGs is to end the global malaria epidemic.


46 https://www.who.int/news-room/fact-sheets/detail/malaria
by 2030. Previously, MDGs also set a number of goals to improve public health outcomes. The United Nations (2015) reports that during the MDGs era, the global incidence of malaria fell by 37 percent, and the mortality rate due to malaria fell by 58 percent. But malaria eradication still remains as a big challenge for developing countries, specifically for the Sub-Saharan African countries. For instance, malaria accounts for around 3 percent of the total global burden of diseases, and developing countries bear more than 99 percent of this total burden.

Although malaria is considered to be the most damaging communicable disease that kills more people than any other disease except tuberculosis, it is curable if promptly diagnosed and adequately treated (WHO, 2001). WHO (2001) has identified several ways to prevent malaria prevalence, including the introduction of modern insecticides, improved case management (e.g., treatments of patients with anti-malaria), and the use of insecticide-treated mosquito nets. Insecticide treated bed nets has proven most effective intervention tool to prevent malaria (Lengeler, 2004). In addition, indoor residual spraying, use of more effective artemisinin-based drugs, and improved diagnostic capacity at health facilities also effectively reduce malaria (Demombynes and Trommlerová, 2012). Countries follow different strategies to fight against malaria. Among these, the following four are considered to be the most common ones: (i) increasing the use of long-lasting insecticide treated bed nets, (ii) higher use of indoor residual

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47 Foreign aid proponents argue that providing nets can help reduce malaria prevalence significantly. But scholars who are not convinced about the effectiveness of foreign aid in reducing malaria prevalence provide a different kind of argument. For instance, Easterly in his 2006 book “The White Man’s Burden” notes that donor-provided free mosquito nets “are often diverted to the black market, become out of stock in health clinics, or wind up being used as fishing nets or wedding veils.”
spraying, (iii) intermittent presumptive treatment for pregnant woman, and (iv) prompt treatment for uncomplicated malaria (Okiro et al., 2013).

Achieving the Sustainable Development Goals target of ending malaria depend on funding availability for investment in prevention and/or treatment of the disease. Western donors allocated significant amount of aid as part of international development commitments to achieve the Millennium Development Goals (MDGs). Under MDGs, Western donors invested over $200 billion dollars to improve public health outcomes in low-income countries (Dieleman et al., 2014). A multi-stakeholder international organization, the Global Fund to Fight AIDS, Tuberculosis and Malaria, which was established in 2002, invests significant amount of resources each year to eradicate HIV/AIDS, tuberculosis, and malaria. After its establishment, it has spent more than 41.6 billion dollar to achieve its goals. Western donors support mass free-distribution of insecticide treated bed nets, and free access to modern medicine and diagnostic tools (Sachs, 2014).

However, Snow et al. (2010) show that even though international communities provide significant support to eradicate malaria, the funding is not adequate for many vulnerable countries. They find that among 93 malaria-endemic countries studied, only 21 countries (12 in Africa) received adequate malaria funding between 2007 and 2009. However, their study suggests that most of the countries (50 countries) exposed to high malaria risks and where 61 percent of the people are prone to malaria are underfunded in their fight against malaria. Their results suggest that as of 2010, funding for malaria control was 60 percent lower than the amount needed for comprehensive control of malaria.

Studies analyzing the impact of Western aid on malaria prevention also exhibit mixed

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48 https://www.theglobalfund.org/en/financials
results. Some scholars argue that development aid for health focusing on reduction of malaria prevalence contribute to lowering the incidence of malaria. Sachs (2014) notes the success of distributing free nets in Kenya that led to a sharp drop in malaria prevalence in the country. Demombynes and Trommlerová (2012) also find that ownership of insecticide treated bed nets in malaria prone areas of Kenya significantly contributed to reducing infant and under-5 mortality in the area. Relatedly, Flaxman et al. (2010) note that development assistance for preventing malaria has increased significantly in the last 10 years. Most of this assistance is targeted to distribute free insecticide-treated bed nets leading lower incidence and prevalence of malaria.

Using Malawi as a case study, Marty et al. (2017) find evidence that foreign aid can reduce malaria prevalence rate. Marty et al. (2017) use two rounds of household surveys and georeferenced foreign aid data to examine the impact of foreign aid on malaria prevalence in Malawi. They find that aid targeted to improve health infrastructure and to control parasitic disease reduce malaria prevalence by 1.20 percentage points. In another study, Marty et al. (2007) conduct a subnational level analysis to measure the impact of Western aid on malaria prevalence and quality of healthcare in Nigeria. Their analysis suggests that aid improves quality of healthcare services and reduces malaria prevalence.

However, in another study on four Malawian hospitals between 2000 and 2010, where Okiro et al. (2013) find that hospital admission rate due to malaria did not decline despite higher inflows of development assistance for malaria prevention. They also find that malaria transmission intensity remained the same during the study period across the four sites being studied. Okiro et al. (2013) also find that pediatric clinical malaria cases in four hospitals did not decrease during 2000-2010.
4.2.3. Chinese Aid and Public Health Outcomes

There is a growing body of Chinese aid literature that assesses the impact of Chinese aid on economic and environmental outcomes. But there are fewer studies that investigate the impact of Chinese aid on public health outcomes. Recently, few scholars (e.g., Bräutigam, 2009; King, 2010, 2014; Martorano et al., 2020; Morgan and Zheng, 2019; Strange et al., 2014) examine the impact of Chinese aid on public health outcomes in African countries, and they find mixed evidence. For example, Martorano et al. (2020) examine the welfare effect of Chinese aid in Sub-Saharan Africa. Using AidData for data on Chinese aid, and demographic and health surveys of African countries, they assess the impact of Chinese aid projects on child health and nutrition conditions in the region. Martorano et al. (2020) argue that health and education related projects are likely to directly improve social outcomes in recipient countries. In addition, social outcomes can also be improved through spillover effects. For instance, China’s vast engagement in large scale infrastructure projects (e.g., road, electrification etc.) is likely to improve citizens’ access to electricity, piped water etc. and in turn contribute to improve public health conditions. In addition to these two channels, Martorano et al. (2020) argue that Chinese aid may improve public health outcomes by increasing income. They find that Chinese aid projects help improve child mortality, but they do not have any impact on child nutrition.

Another important study on the impact of Chinese aid on public health outcome is conducted by Cruzatti et al. (2020). They examine the relationship between Chinese aid and infant mortality based on 92 demographic and health surveys (DHS) across 55,000 sub-national locations from 53 countries over the period of 2002 to 2014. Cruzatti et al. (2020) argue that Chinese aid can be harmful at the local level, depending on the within sector fungibility of aid and effectiveness
of donor funded projects compared to government funded projects being replaced. They compare the public health outcomes in areas having active Chinese aid projects with areas having no aid projects, and between areas having inactive Chinese aid projects and those without any aid projects. They find that Chinese aid projects increase infant mortality at the sub-national level, while decreasing it at the country level.

Some scholars conduct case studies to measure public health outcomes of Chinese aid. For instance, Kotsadam et al. (2018) provide household level evidence for the impact of both Chinese aid and Western aid on infant mortality in Nigeria. Using geocoded data, they show that geographic proximity of Chinese aid projects to Western aid projects reduces infant mortality. They find that the risk of infant mortality and child and neonatal mortality decreases significantly in the areas having any type of aid projects.

4.2.4. Does Chinese Foreign Aid Contribute to Eradicating Malaria?

Although a large volume of literature examines the effect of Western foreign aid on malaria, there is a scarcity of studies on the impact of Chinese aid on malaria prevalence in developing countries. This study seeks to reduce the gap in literature by examining whether and how Chinese aid contributes to reducing malaria incidence and prevalence in developing countries, conditioning on the regime type of the recipient countries.

Although China does not prioritize malaria prevention as a key goal during their aid allocation decisions, majority of its aid is allocated to countries that are most susceptible to malaria. As I discussed earlier, I argue that even though China does not dedicate adequate development assistance for malaria eradication, higher inflows of Chinese aid frees up recipient countries’ domestic resources to spend more for the fight against malaria. In other words, as most developing
countries lack health budget to spend on malaria eradication activities, ease of budget due to higher Chinese aid inflows is likely to help these countries spend more monies for lowering the incidence and prevalence of malaria. Therefore, higher Chinese aid indirectly contributes to reducing malaria in recipient countries.

4.3. Theory and Hypothesis

Previous literature that examines the impact of foreign aid uses a basic evaluation framework, which assumes aid as one of the factors that contribute to social and economic outcomes. This body of works estimates a social production function, where social or economic outcomes is produced by aid, along with other factors. Following Ndikumana and Pickbourn (2016), the framework can be described as follows:

\[ \text{Aid Outcome} = f(\text{aid}|X); \]

where \( X = \{\text{policy, absorptive capacity of the country, structural factors}\} \)

This impact evaluation framework of aid effectiveness considers development outcome as a function of foreign aid, while considering a set of auxiliary factors (e.g., recipient countries’ deep structural characteristics, policies they follow, and a country’s absorptive capacity to utilize aid) contributing to economic development, either in additive form or in multiplicative form. Following existing literature (e.g., Burnside and Dollar, 2000; Collier and Dollar, 2002; Dalgaard et al., 2004; Easterly et al., 2004; and Rajan and Subramanian, 2008) that uses these auxiliary factors as multiplicative forms, I argue that the effect of aid on public health outcomes at the individual level is contingent upon these auxiliary factors. Although most scholars utilize this framework to test the effect of Western foreign aid on health and economic development outcomes at aggregate level, in this paper, I use it for examining the impact of Chinese aid on an individual-level public health
outcome (i.e., malaria incidence rate).

I assert that the impact of Chinese development assistance on individual level well-being depends on the regime type of host countries. Although existing studies (e.g., Abdenur, 2014; Brautigam, 2009; Davies, 2007; Fuchs and Rudyak, 2017; Hapler, 2010; Naim, 2007; Pehnelt, 2007; Taylor, 1998; Tull, 2006) suggest that Chinese development assistance is generally allocated to commercial, geo-political, and natural resource extraction related projects, I argue that higher flows of Chinese development assistance frees up money for recipient countries’ treasury for other uses. These freed up resources can be used either for increasing public spending in social sectors (e.g., health, education, and welfare programs), or for distributing private goods, depending on host country regime type. This difference in utilizing freed up resources leads to differences in individual level impact for democracies and autocracies. The underlying assumptions of my theoretical argument are as follows: (i) recipient governments have adequate state capacity to distribute public goods efficiently, and (ii) there is no bias in allocating public goods towards electorally competitive districts. That is, democratic governments do not strategically allocate public spending to key electoral districts; there is equitable distribution of public goods across the country. In the following sub-section, I discuss in detail how I build my theory, and I propose an empirically testable hypothesis.

**Chinese Development Assistance and Public Health Outcomes**

Chinese development assistance usually comes through projects and in-kind support, and cash budgetary grants is uncommon. Chinese development assistance literature suggests that China usually provides money directly to their own contractors or companies to carry out foreign aid projects (Brautigam, 2009, 2010; Dreher et al., 2018; Strange et al., 2017a). Contrary to Western
donors, China does not send aid funds to accounts controlled by recipient countries. Moreover, China rarely provides cash aid as budgetary support. As Brautigam (2010) notes, “the Chinese almost never transfer any actual money through their loans, and only rarely give aid as cash grants. Keeping the money in China, with payments to Chinese companies and their subcontractors authorized by the borrowing government, actually aids in avoiding large-scale embezzlement, although kickbacks might still take place” (page 30). In this paper, I assume that although little or no money from Chinese development assistance goes into the recipient countries’ treasury, inflows of Chinese development assistance projects free up money from host countries’ budget that governments can spend for other purposes.

The spending decision on freed up resources is guided by the nature of the host state’s political institutions. I argue that democratic governments spend freed up money in social sectors to increase provision of public goods (e.g., health, education, and welfare programs), leading to greater citizen well-being than in non-democracies where leaders use the freed up money predominantly for distributing private benefits. More specifically, I argue that the impact of Chinese development assistance differs across regime types. In democracies, Chinese development assistance increases social sector spending, leading to greater individual well-being. On the other hand, in non-democracies, Chinese development assistance stimulates spending for private goods.

49 However, Brautigam (2009, page 142) also notes that “There are exceptions. For creditworthy governments like Botswana or Mauritius, with good economic environments and low risk, the Eximbank can issue the loan directly to the borrowing government. These institutions would then collect repayment, and service the debt to Eximbank. For less creditworthy governments, such as Sudan or Angola, the Eximbank disburses the loan directly to a Chinese enterprise or joint venture, believing this can better guarantee its productive use, and thus repayment.”
leading to lower levels of individual level well-being than democracies.

I build my argument based on the selectorate theory provided by Bueno de Mesquita et al. (2003). They assume that the primary goal of political leaders is getting elected and staying in power\(^{50}\). To achieve their goals, leaders need support from a segment of the population, which is called the winning coalition (W). The size of the winning coalition varies across regime types. For example, it consists of a small group of elites in military juntas and more than half the constituency in case of democracies. In order to stay in power, leaders have to provide goods and services to their winning coalition, which limits opposition or any kind of dissatisfaction from the winning coalition, in addition to ensuring loyalty from them (Bueno de Mesquita et al., 2003).

Hence, according to the selectorate theory, leaders maximize utility by efficiently distributing private goods and public goods among the winning coalition and other segments of the public. Private goods are distributed only among the winning coalition members, whereas public goods are enjoyed by most citizens as they are non-excludable. Since the cost differential between private goods and public goods is high, leaders with larger coalitions allocate resources differently than leaders with a smaller winning coalition. In case of small winning coalitions (e.g., military junta, autocracy), leaders only need support from a few individuals, whereas in larger winning coalitions (e.g., democracies), leaders need to retain support from a larger number of people. In case of a larger winning coalition, governments spend higher amount of money in the social sector and larger segment of the public receives transfers from the government. As a result, public support for a democratic leader remains strong, and more importantly, individual well-being

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\(^{50}\) Politicians maximize their chances of reelection and therefore constituency preferences are important constraint in their policy choices (Mayhew, 1974).
of citizens improves significantly. On the other hand, when leaders have a smaller winning coalition, they spend less in social sector to bolster political support. However, since few individuals get private benefits from the government, the magnitude of improvement in individual well-being of the mass is lower in these regimes. In short, democratic states provide larger amount of public goods and hence spend more money in social sector (e.g., health, education, and welfare programs) that improves well-being of more citizens compared to non-democracies, where only smaller number of people reap benefits from private goods distributed by leaders.

Previous works (for example, Adsera and Boix 2002; Avelino et al. 2005; Brown and Hunter, 2004; Kaufman and Segura 2001; Lake and Baum, 2001; Nooruddin and Simmons, 2006; Rudra and Haggard 2001) have well identified how regime type plays an important role in determining social sector spending. These scholars argue that democracies allocate greater funds to social programs than autocracies due to electoral and interest group pressures. For instance, Kaufman and Segura-Ubiergo (2001) note that the simple logic behind why democracies spend more than autocracies on social sector is that democratic leaders face greater pressure from mass constituency to deliver social goods and services than autocracies, and therefore are more likely to spend more money on social sector budget. These scholars also suggest that political institutions

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51 Empirical evidence also suggests that social sector spending varies across regime type. For instance, Rudra and Haggard (2001) find that democratic LDCs with stronger labor organizations are more likely to spend more on social protection. Similarly, Avelino et al. (2005) and Brown and Hunter (2004) find strong positive relationship between democracy and social spending in Latin America, predominantly on programs that help human capital formation. Kaufman and Segura-Ubiergo (2001) find evidence for the impact of regime type on disaggregated social spending. For example, they find that a democracy spends more money on health and education than nondemocracies.
can directly affect social sector spending, or the spending may depend on other factors such as trade and financial liberalization (Avelino et al., 2005), labor organization (Rudra and Haggard, 2001), and strong unions (Kaufman and Segura-Ubiergo, 2001). Spending priorities of governments also depend on the strength of organized groups. For example, Nooruddin and Simmons (2006) suggest that reduction in social sector spending due to IMF’s austerity programs was more visible in sectors that have least organized interests. Similarly, Brown and Hunter (2004) argue that democracies allocate greater amount of money for primary education because it benefits the largest number of potential voters.

In sum, based on the above discussion, I argue that inflows of Chinese development assistance projects free up money from host countries’ budget that governments can spend for other purposes. The spending decision of freed up resources is guided by the quality of the host state’s political institutions. Grounding on the selectorate theory, I argue that democratic governments are more likely to spend freed up funds for distributing public goods, while non-democratic governments are more likely to spend it on distributing private goods among members of their winning coalition. More specifically, I argue that in democracies, governments use relatively more freed up monies in improving the well-being of its citizens than non-democracies. As democratic leaders need votes to be reelected, they reallocate freed up money to social sectors (e.g., health, education, and welfare programs). Higher public spending on social sectors thus help leaders to be re-elected, and essentially improves the well-being of citizens (e.g., public health outcomes). On the other hand, in non-democracies, leaders primarily use freed up money to distribute private goods, rather than increasing public spending in the social sector. Therefore, greater flows of Chinese development assistance to non-democracies is less likely to improve
individual level well-being.

Based on the above argument, in this paper, I empirically test the following hypothesis:

**Hypothesis 1**: the higher the inflows of Chinese development assistance, the greater the improvement in individual level well-being in democracies than in non-democracies.

### 4.4. Research Design

I apply multilevel modeling techniques, specifically, hierarchical linear models (HLM), to empirically test my hypothesis. I use both household level and national level data for this purpose. For representing individual-level well-being, I utilize household level malaria incidence rate. I confine my analysis to the period of 2000-2014, because data on geocoded Chinese aid provided by AidData is available for these years only. I also confine my analysis to 54 countries since over the period of 2000-2014, geocoded household survey data is available for these countries only. Table 4.1 provides a summary statistics of data I use for the analysis. In the following sub-sections, I describe the detailed procedures of my empirical analysis including the construction of dataset, conceptualization of the dependent variable, independent variable, and control variables, in addition to estimation strategies.

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52 The list of countries considered in the analysis is provided in appendix 1. Out of 54 countries, 30 countries are from sub-Saharan Africa, and 15 countries are from Asia - two regions most vulnerable to malaria incidence. DHS provides geocoded household survey data for 60 countries. But I utilize 54 countries because for the other six countries (Central African Republic, Chad, Guatemala, Myanmar, Niger, and South Africa) no geocoded survey was conducted during my study period, which is again restricted by the availability of Chinese aid data.
Table 4.1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs.</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaria Incidence Rate (moving average)</td>
<td>232060</td>
<td>0.119</td>
<td>0.139</td>
<td>0</td>
<td>0.6</td>
</tr>
<tr>
<td>Chinese Aid (million USD, log)</td>
<td>110574</td>
<td>1.518</td>
<td>1.332</td>
<td>0</td>
<td>5.994</td>
</tr>
<tr>
<td>Polity2</td>
<td>167192</td>
<td>3.354</td>
<td>4.566</td>
<td>-9</td>
<td>9</td>
</tr>
<tr>
<td>Squared Polity2</td>
<td>167192</td>
<td>32.105</td>
<td>27.282</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Chinese Aid * Polity2</td>
<td>101396</td>
<td>5.294</td>
<td>10.016</td>
<td>-32.39</td>
<td>45.915</td>
</tr>
<tr>
<td>Nightlight Intensity (moving average)</td>
<td>251483</td>
<td>23.53</td>
<td>21.088</td>
<td>0</td>
<td>58.8</td>
</tr>
<tr>
<td>Western Foreign Aid (million USD, log)</td>
<td>173614</td>
<td>6.797</td>
<td>0.889</td>
<td>0.207</td>
<td>9.331</td>
</tr>
<tr>
<td>Population Density</td>
<td>251483</td>
<td>2392.26</td>
<td>3618.74</td>
<td>0</td>
<td>53518</td>
</tr>
<tr>
<td>Travel Time (minutes) to Major Cities</td>
<td>251483</td>
<td>31.083</td>
<td>120.295</td>
<td>0</td>
<td>4499.92</td>
</tr>
</tbody>
</table>

4.4.1. Dependent Variable: Malaria Incidence Rate

As I discussed earlier in the second section of this essay, malaria prevalence is a major public health concern in foreign aid recipient countries. Therefore, I choose malaria incidence rate as my dependent variable to capture the impact of Chinese aid on public health outcomes in recipient countries. I obtain individual level malaria incidence rate data from AReNA’s DHS-GIS Database prepared by the International Food Policy Research Institute (IFPRI) (IFPRI 2020). The dataset provides a demographically-weighted mean of the clinical incidence rate of malaria (more specifically, pixel-level mean rate of clinical Plasmodium falciparium malaria cases) observed per person per year for the age cohorts of 0-5, 5-15, and 15+ years old. I construct the variable *malaria incidence rate* by taking simple moving average (SMA) of malaria incidence rate for each individual living in a specific geographic location for the period of 2000-2014. I take the moving average to empirically show that the moving average of malaria incidence for the study period has a relationship with Chinese foreign aid. According to my theory, the moving average of malaria incidence is likely to be smaller for individuals living at geographic coordinates with higher Chinese aid and better democracies.
4.4.2. Independent Variable: Interaction between Chinese Aid and Polity2

As I examine the effect of Chinese aid on malaria incidence rate conditional on regime type, my key choice variable is an interaction term, constructed by interacting Chinese aid variable with the regime type variable. I obtain geocoded Chinese development assistance data from AidData’s Geocoded Global Chinese Official Finance Dataset, 2000-2014 (Version 1.1.1) introduced by Bluhm et al. (2020). The dataset contains 3,485 projects worth USD 274 billion (comprising both concessional and non-concessional assistance) located in 6,184 subnational regions across 138 countries and regions over the period of 2000-2014\(^53\). Even though geocoded Chinese aid data is available for 138 countries, this study utilizes data for 54 countries only, as the data for AReNA’s DHS-GIS is available for these 54 countries respectively. The geocoded Chinese aid dataset contains all officially committed Chinese aid projects, where either implementation process has been initiated or completion has been reached between 2000 and 2014.

AidData’s geocoded Chinese development assistance database includes project locations, which makes it possible for me to conduct spatial analysis and examine the impact of Chinese development assistance at the local level. For measuring Chinese aid variable, I take the natural log of the amount of Chinese aid allocated to each project location calculated in millions of USD. AidData classifies Chinese aid into three categories: (i) Official Development Assistance (ODA), (ii) Other Official Flow (OOF), and (iii) Vague Official Flow (VOF)\(^54\). While constructing the

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\(^53\) The dataset provides data for first subnational administrative levels (ADM1) and second administrative levels (ADM2). ADM1 regions usually correspond to provinces or states, whereas ADM2 regions correspond to counties or districts. The dataset includes only projects whose status indicate that they are completed or implemented.

\(^54\) These projects cannot be categorized either as OOF or ODA because of inadequate open source information.
Chinese aid variable, I include all of these categories, as I assume that Chinese development assistance frees up monies for recipient countries’ treasuries and incentivizes resource reallocation for political gains, regardless of the type of Chinese foreign aid.

For measuring quality of political institutions, I consider regime type of the recipient countries. For measuring regime type, I use the 21-point Polity2 scale, constructed by subtracting the polity autocracy score from the democracy score, and producing a range of values between -10 (strong autocracies) and 10 (highly institutionalized democracies). I obtain the Polity2 data from the Polity IV Project (Marshall, Gurr, and Jaggers, 2013). Finally, to construct the interaction variable, I simply multiply Chinese aid variable with polity scores.

4.4.3. Control Variables

Following extant literature (e.g., Brazys and Vadlamannati, 2020; Cruzatti et al., 2020; Martorano et al., 2020) that examines the impact of foreign aid on individual level well-being, I control for a number of economic and social indicators at subnational regions in my regression models. For instance, I use the average night-time light intensity to capture the economic condition of the households living in the subnational regions55. Due to lack of reliable measure for economic development at the subnational level, satellite-measured night-time light intensity is used as an indicator representing economic activity at the subnational region (Henderson et al., 2012). I obtain

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55 Extant empirical literature finds strong relationship between night-time light intensity and GDP growth at cross-country level (Henderson et al., 2012). Similarly, many studies find relationship between the two at the sub-national level (Bhandari and Roychowdhury, 2011; Doll et al., 2006; Hodler and Raschky, 2014; Michalopoulos and Papaioannou, 2014; Noor et al., 2008; Olivia et al., 2015).
nightlight intensity data from the AReNA database. Similarly, I control for average population density, and travel time to the nearest city to capture the overall economic condition of people living in the subnational regions. I obtain both the population density and travel time data from the AReNA database that report the respective values for each geographic coordinates. Moreover, most Chinese aid recipient countries also receive Western foreign aid. Separating the effects of Western aid is thus important to get unbiased estimates. Therefore, I control for Western foreign aid in my models. For this purpose, I obtain DAC foreign aid data from WDI that are reported as net official development assistance and official aid received. In my analysis, the amount of DAC aid is expressed as log million USD\textsuperscript{56}.

4.4.4. Estimation

As discussed earlier, I utilize AidData’s geocoded Chinese development assistance data available at sub-national level and AReNA’s geocoded DHS-GIS data available at household level to empirically test my hypothesis. Subnational level analyses help to control for unobserved country-specific heterogeneity and space-specific local characteristics (Bitzer and Goeren, 2018). To identify the true effect of Chinese aid on malaria incidence rate, it is better to use subnational level analysis because national level analysis may be confounded by biogeographic, climatic, socioeconomic, and demographic conditions (Bitzer and Goeren, 2018). Therefore, for estimation purposes, I geographically match AReNA’s DHS-GIS dataset with geocoded sub national level Chinese aid dataset.

\textsuperscript{56} Following the tradition of extant literature (e.g., Anaxagorou et al., 2020; Dreher at al., 2019) to avoid taking the logarithm of 0, I add a value of 1 before taking the logarithm of Western aid variable.
I apply multilevel modeling techniques, specifically, hierarchical linear models (HLM), to conduct empirical analyses in this paper. The hierarchical linear model is a type of regression analysis for multilevel data where the dependent variable considers the lowest level or unit, and explanatory variables can be defined at any level. Steenbergen and Jones (2002, page 219) note that “(t)he goal of multilevel analysis is to account for variance in a dependent variable that is measured at the lowest level of analysis by considering information from all levels of analysis.” They explain that “(b)y specifying cross-level interactions, it is possible to determine whether the causal effect of lower-level predictors is conditioned or moderated by higher-level predictors.”

Using HLM, I nest lower level household survey data and geocoded Chinese development assistance data (“micro”) within higher-level state (“macro”) data. My dependent variable malaria incidence rate is a micro variable, and my key choice variable is an interaction term consisting of sub-national level Chinese development assistance (a micro variable) and regime type (a macro variable). In my analyses, there are numerous micro samples for per unit of macro unit. For example, for a given amount of Chines aid for a sub-national unit for a year, there are numerous individual level units from the household surveys. The analysis is limited to the period of 2000-2014, as geocoded Chinese development assistance data provided by AidData is available for this period only. In addition, I confine my study to the countries for which both AidData and AReNA’s DHS-GIS data are available.

4.5. Results and Discussion

Table 4.2 reports the findings from my empirical analysis. Model 1 estimates the relationship between Chinese aid and malaria incidence rate, controlling for all the variables discussed in previous section, except for polity2. The estimated Chinese aid coefficient indicates
a negative relationship between Chinese aid and malaria incidence rate. However, the coefficient is statistically insignificant. Model 2 estimates the relationship between polity2 and malaria incidence rate controlling for all the variables discussed in the previous section, except for Chinese aid. The estimated polity2 coefficient in Model 2 suggests that a higher polity score significantly reduces malaria incidence rate of the average household living in the survey area. Model 3 is the main model in my statistical exercise, where I estimate the effects of Chinese aid on malaria incidence rate at individual level contingent upon the polity score of the respective country. The Chinese aid coefficient in Model 3 suggests that higher amount of Chinese aid significantly reduces malaria incidence rate at the household level in the recipient country, holding all other variables constant. Similarly, polity2 coefficient suggests that higher polity score significantly reduces individual level malaria incidence rate in the recipient country.
Table 4.2: Effects of Chinese Aid on Malaria Incidence Rate, Multilevel Models

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Fixed effects (‘observed’ effects)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese Aid</td>
<td>-0.00228</td>
<td>-0.000722***</td>
<td>0.000248</td>
</tr>
<tr>
<td></td>
<td>(0.00248)</td>
<td>(0.000216)</td>
<td>(0.00248)</td>
</tr>
<tr>
<td>Polity2</td>
<td>-0.00439**</td>
<td>-0.00676**</td>
<td>(0.00189)</td>
</tr>
<tr>
<td></td>
<td>(0.000217)</td>
<td>(0.00189)</td>
<td>(0.00189)</td>
</tr>
<tr>
<td>Chinese Aid * Polity2</td>
<td></td>
<td></td>
<td>-0.000249***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(3.90e-05)</td>
</tr>
<tr>
<td>Squared Polity2</td>
<td></td>
<td>0.000713***</td>
<td>0.00134***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5.55e-05)</td>
<td>(7.50e-05)</td>
</tr>
<tr>
<td>Nightlight Intensity</td>
<td>-0.000722***</td>
<td>-0.00155***</td>
<td>-0.00170***</td>
</tr>
<tr>
<td></td>
<td>(7.09e-06)</td>
<td>(1.08e-05)</td>
<td>(1.46e-05)</td>
</tr>
<tr>
<td>Western Aid</td>
<td>-0.000521</td>
<td>-0.00575***</td>
<td>-0.00863***</td>
</tr>
<tr>
<td></td>
<td>(0.00365)</td>
<td>(0.000537)</td>
<td>(0.00754)</td>
</tr>
<tr>
<td>Population Density</td>
<td>-6.40e-07***</td>
<td>-6.28e-07***</td>
<td>3.79e-07***</td>
</tr>
<tr>
<td></td>
<td>(3.26e-08)</td>
<td>(5.34e-08)</td>
<td>(7.65e-08)</td>
</tr>
<tr>
<td>Travel Time (minutes) to Major Cities</td>
<td>6.57e-05***</td>
<td>0.000162***</td>
<td>0.000116***</td>
</tr>
<tr>
<td></td>
<td>(6.87e-06)</td>
<td>(4.94e-06)</td>
<td>(6.57e-06)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.158***</td>
<td>0.206***</td>
<td>0.239***</td>
</tr>
<tr>
<td></td>
<td>(0.0250)</td>
<td>(0.0191)</td>
<td>(0.0237)</td>
</tr>
</tbody>
</table>

Random effects (‘unobserved’ effects)

| συ     | .0005324*** | .002999*** | .0034377*** |
| LR χ²  | 320000***   | 250000***  | 140000***   |
| Observations | 99,733    | 153,643    | 93,549      |
| Number of groups | 1,827        | 50         | 48          |

Notes: Dependent variable: malaria incidence rate. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
The goal of my empirical analysis is to investigate whether the effect of Chinese aid on individual level malaria incidence rate depends on recipient country regime type. Figure 4.1 presents the conditional effect (estimated from Model 3) of Chinese aid on household level malaria incidence rate, holding all other variables constant at their means. The figure exhibits a linear negative relationship between polity scores and household level malaria incidence rate, which indicates that higher Chinese aid in general reduces individual level malaria incidence rate in the sample of countries being studied. However, the figure also shows that the Chinese aid is more effective in reducing individual level malaria incidence rate in countries with higher polity scores. The findings are consistent with my hypothesis that the higher the inflows of Chinese development
assistance, the greater the improvement in individual level well-being in democracies than in non-democracies. For instance, Figure 4.1 indicates that malaria incidence rate is lowest for countries with the highest polity score and vice versa.

My statistical analyses also provide expected results for control variables. For example, I find that coefficients for nightlight intensity, Western aid, and travel time to major cities have expected signs and are statistically significant for all of the specifications. The statistically significant negative coefficient of nightlight intensity indicates that higher nightlight intensity reduces individual-level malaria incidence rate. Similarly, I find that Western foreign aid contributes to reducing individual-level malaria incidence rate in the sample countries.

4.6. Robustness Check

As a robustness check, I re-estimate all my models by applying pooled OLS methods. Table 4.3 reports the results from pooled OLS, which are more or less consistent with the estimates from hierarchical linear models. Figure 4.2 reports the conditional effects of Chinese aid on individual level malaria incidence rate. Consistent with Figure 4.1, Figure 4.2 suggests that Chinese aid is more effective in reducing individual level malaria incidence rate in countries with higher polity scores. This robustness check suggests that the conditional relationship between Chinese aid and household level malaria incidence rate holds even when the models are estimated using pooled OLS estimators.
Table 4.3: Effects of Chinese Aid on Malaria Incidence Rate, Pooled OLS Models

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Chinese Aid</td>
<td>-0.00628***</td>
<td>-0.000631</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000295)</td>
<td>(0.000392)</td>
<td></td>
</tr>
<tr>
<td>Polity2</td>
<td>-0.00249***</td>
<td>-0.00154***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000136)</td>
<td>(0.000206)</td>
<td></td>
</tr>
<tr>
<td>Chinese Aid * Polity2</td>
<td></td>
<td>-0.00133***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(6.98e-05)</td>
<td></td>
</tr>
<tr>
<td>Squared Polity2</td>
<td></td>
<td>9.26e-05***</td>
<td>0.000188***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.16e-05)</td>
<td>(2.66e-05)</td>
</tr>
<tr>
<td>Nightlight Intensity</td>
<td>-0.00125***</td>
<td>-0.00172***</td>
<td>-0.00117***</td>
</tr>
<tr>
<td></td>
<td>(2.42e-05)</td>
<td>(1.91e-05)</td>
<td>(2.51e-05)</td>
</tr>
<tr>
<td>Western Aid</td>
<td>0.00173***</td>
<td>0.000123</td>
<td>0.0146***</td>
</tr>
<tr>
<td></td>
<td>(0.000452)</td>
<td>(0.000375)</td>
<td>(0.000498)</td>
</tr>
<tr>
<td>Population Density</td>
<td>-3.27e-06***</td>
<td>-5.10e-07***</td>
<td>-2.50e-06***</td>
</tr>
<tr>
<td></td>
<td>(1.22e-07)</td>
<td>(9.22e-08)</td>
<td>(1.26e-07)</td>
</tr>
<tr>
<td>Travel time (minutes) to major cities</td>
<td>-0.000243***</td>
<td>-0.000233***</td>
<td>-0.000235***</td>
</tr>
<tr>
<td></td>
<td>(1.24e-05)</td>
<td>(1.02e-05)</td>
<td>(1.27e-05)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.159***</td>
<td>0.190***</td>
<td>0.0720***</td>
</tr>
<tr>
<td></td>
<td>(0.00311)</td>
<td>(0.00259)</td>
<td>(0.00349)</td>
</tr>
<tr>
<td>Observations</td>
<td>99,733</td>
<td>153,643</td>
<td>93,549</td>
</tr>
</tbody>
</table>

Notes: Dependent variable: malaria incidence rate. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
4.7. Conclusion

This study examines the impact of Chinese aid on malaria incidence rate by geo-matching ARENA’s DHS-GIS Database with AidData’s Chinese development assistance data. One of the reasons for non-robust findings on the relationship between foreign aid and development outcomes is due to a concentrated focus on country-level analysis rather than regional and sub-national level analysis (Dreher and Lohmann, 2015). As aid projects are not distributed equally across a country, its effects is also likely to differ across regions. Literature suggests that regional level analysis of aid effectiveness provides more precise estimates than country-level estimates (Dreher and Lohmann, 2015). However, lack of data and methodological problems related to identifying correct causal mechanism pose challenge in following this strategy. Recent releases of geocoded aid data by AidData has enabled many scholars to measure aid effectiveness at the regional level.
This study also exploits the geocoded Chinese aid data by the AidData and examines the impact of Chinese foreign aid on individual level well-being conditioned by the regime type in recipient countries. I utilize geocoded household survey data provided by AReNA, sub-national level Chinese aid data provided by AidData, and national level regime type data to examine the effects of Chinese aid on malaria incidence rate in 54 Chinese aid recipient countries.

I find that Chinese aid reduces malaria incidence rate at the individual level in recipient countries. However, the effect is conditioned by the recipient countries’ regime types. Findings from this study carries implications for the role of domestic political institutions in improving public health outcomes in recipients, as utilization of the benefits bestowed from foreign financing is conditioned by the quality of political institutions in place. Results from this study suggests that Chinese aid is more effective in improving individual level well-being in countries with better democracies. Although Chinese aid is predominantly allocated on the basis of commercial, geopolitical, and natural resource extraction motives, it may improve individual-level well-being if recipient states have better democratic institutions in place. Institutional checks and balances and electoral incentives in democracies motivate recipient leaders to spend more on social sectors, which consequently derives positive health outcomes from Chinese foreign aid, albeit pursuing human development outcomes in recipient states is not among the stated objective of the donor.

The findings from this chapter endorse the claims made by Western scholars that having well-functioning democratic institutions may increase social welfare and may improve the quality of living standard of citizens. Moreover, these findings imply that if a country has democratic institutions in place, it may utilize external financing to enhance social welfare of its people despite the fact that the financing is provided by a non-democratic donor.
CHAPTER 5. CONCLUSION

China’s intensive engagement in development finance in the last two decades has garnered a wide range of criticism from Western scholars, development practitioners and policymakers. Critics often cherry pick Chinese projects to claim that Chinese development finance promotes corruption, deteriorates the quality of democratic institutions, generates unsustainable economic growth, and is less relevant in improving human development outcomes in recipient states. However, many of these claims are not generalizable as they are not drawn from rigorous systematic analyses. This dissertation project aims to add to the small volume of works that systematically conduct analyses to investigate whether Chinese development finance produces positive or negative externalities, and also explore the mechanisms through which these externalities are generated. More specifically, this dissertation project investigates the political and economic impacts of Chinese development finance using a combination of cross-sectional, subnational, and household level data, and by applying several different statistical methods.

Major findings from my empirical analyses are as follows. First, Chinese development finance prolongs the tenure of non-democratic leaders in recipient countries. Second, Chinese development finance increases social sector spending in countries with higher polity scores. More specifically, I find empirical evidence that democratic leaders take advantage of Chinese financial assistance and increase spending on health and education sectors. Third, higher inflows of Chinese aid improve public health outcomes in the recipient countries given that the countries have better political institutions. More specifically, based on household level analysis, I find that Chinese aid
reduces malaria incidence rate in the countries with higher polity scores.

Findings from my statistical analyses have important implications. First, as Chinese aid helps non-democratic leaders stay in power for a longer period of time, it may undermine the fundamentals of liberal world order led by the US. Longer tenure of autocratic leaders in the Chinese aid receiving countries may contribute to democratic backsliding. More specifically, as autocratic leaders are less interested to uphold democratic norms and values, strengthening of their grips on power may increase the incidence of human rights violation, fuel corruption, and deteriorate freedom of speech and freedom of press in these host countries.

Second, statistical analyses in my dissertation also suggest that despite emphasizing on commercial, geo-political, and natural-resource extraction related projects, Chinese aid may generate positive externalities such as expanded welfare enhancing social sector spending and improvements in public health outcomes, if recipient countries have better domestic political institutions in place. This findings endorse the claims made by Western scholars that having well-functioning democratic institutions may increase social welfare and may improve the quality of living standard of citizens. Moreover, my findings imply that if a country has democratic institutions in place, it may utilize external financing to enhance social welfare of its people despite the fact that the financing is provided by a non-democratic donor.

As China has emerged as a “lender of first resource”, in order to remain competitive in international development finance activities, Western donors have started to change their aid allocation strategies. A group of development scholars and development practitioners consider that relaxing the conditionalities traditionally attached with Western aid may be a means to keep Western finance competitive and attractive to recipient countries. However, the flexibility of
conditionalities may reduce the quality of governance in host countries, and reduce the pace of policy and institutional reforms, which are considered to be the key tools of sustainable economic development in low and middle income countries. Another strategy could be emphasizing on bypass aid, which may improve economic welfare of the people in recipient countries, as the aid is channeled through non-governmental organizations and is predominantly utilized in improving health and education outcomes. However, as bypass aid is not attached with conditionalities such as good governance, policy reforms, and institution building, it may not be sufficient to ensure sustainable economic development of the aid recipient countries. Figuring out strategies to resume government to government aid transfer that involves conditions related to good governance and institution building would be a challenge for Western donors in the context of the recent rise of China in development finance activities. As Chinese assistance improves social welfare in democratic countries, Western countries may take stronger initiative to enhance collaboration with China in continuing its development work in developing countries. On the other hand, China may also collaborate more with Western countries, as their development projects produce more positive externalities in countries with better democratic institutions.

The success of China’s Belt and Road initiative may depend on the ability of the China financed projects to generate economic benefits for the recipient countries, so that the borrowers can repay the loans in a timely manner to China. China’s project appraisal procedures lack systematic evaluation and transparency, and they often finance projects that have lower potential to generate economic benefits. Therefore, critics of Chinese aid express concern that in the long run, Chinese lending may manifest as non-performing loans in many cases. Sri Lanka can serve as a good example of how Chinese development finance may make a country economically
vulnerable. Chinese-funded mega projects in Sri Lanka turned out to be economically unprofitable, and the country is now unable to repay the loans taken from China. Sri Lanka’s case is being used by critics of Chinese development finance to argue that if more Chinese projects turn out to be economically unprofitable, more borrowers will be unable to repay the loans to China, which may eventually undermine BRI’s success.

One of the important limitations of this dissertation project is that I use Chinese development finance data available from only a single source - AidData. I use this dataset because it is the most comprehensive dataset, and it is superior to other available datasets from various perspectives. The dataset covers a wider range of countries and regions, includes information on a greater number of projects, reports information on different types of financial

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57 Mahinda Rajapaksa received funds from China to construct a sea port and an airport in his birthplace Hambantota, which helped Rajapaksa to extend his stay in office. But as the port has proved to be economically unproductive, Sri Lanka has been unable to repay the loans taken from China.

58 The other research institutes that provide Chinese aid data include: (i) the China Africa Research Initiative at the Johns Hopkins University School of Advanced International Studies, (ii) the Boston University Global Development Policy Center, (iii) the RAND Corporation, (iv) the US Congressional Research Service (CRS), (v) the Lowy Institute, (vi) the Japan International Cooperation Agency (JICA) Research Institute, and (vii) the American Enterprise Institute (AEI). However, the datasets provided by these institutions are limited in scope and coverage. As Dreher et. al. (2022, page 71) note that “some are specific to individual regions or types of financial flows. Some suffer from over-counting, mis-categorization, incomplete coverage, and heavy reliance on individual sources (particularly English-language media sources). Some provide “black box” financial estimates at the country level that do not enable analysis by sector, financial modality, financier, implementing agency, subnational locality, or other attributes that can be usefully categorized at the project level. Others fail to provide enough information about their methods and source to enable replication and building upon their work”.

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flows, and the dataset is constructed on the basis of a systematic methodology, which is validated by conducting field inspection of Chinese development projects in three representative recipient countries. Any future release of official data by Chinese government or any release of more comprehensive data from other sources may provide a great opportunity to test the validity of the findings conducted in this project.

This dissertation project suggests a number of potential research avenues to explore in the coming days. First, whether and how other domestic political institutions such as government ideology (left leaning or right leaning government) and the number of veto players condition the effectiveness of Chinese foreign aid in the host countries could be examined. Second, there is also a scope for examining whether Chinese aid poses a “debt trap” to recipient countries, and identify the countries more vulnerable to the possible debt trap. In addition, whether the likelihood of possible “debt trap” vary across regime types and government ideology could be an important topic to investigate in future. Third, as some Chinese mega energy projects (e.g., coal fired power stations) are claimed to be apathetic to environmental concerns, examining the public health impacts (e.g., maternal and child health) of these mega projects located in climate vulnerable countries (e.g., Bangladesh, Indonesia) would be an important arena to explore in the coming days.
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APPENDIX
### SUPPLEMENTAL TABLES AND FIGURES FOR CHAPTER 2

| Country Sample (Recipient of Chinese Foreign Aid 2000-2014, 122 countries) |
|-----------------|-----------------|-----------------|-----------------|
| Afghanistan     | Cote D'Ivoire   | Liberia         | Singapore       |
| Albania         | Cuba            | Libya           | Somalia         |
| Algeria         | Cyprus          | Macedonia, FYR  | South Africa    |
| Angola          | Djibouti        | Madagascar      | South Sudan     |
| Argentina       | Ecuador         | Malawi          | Sri Lanka       |
| Armenia         | Egypt           | Malaysia        | Sudan           |
| Australia       | Equatorial Guinea| Mali            | Suriname        |
| Azerbaijan      | Eritrea         | Malta           | Syria           |
| Bahamas         | Ethiopia        | Mauritania      | Tajikistan      |
| Bahrain         | Fiji            | Mauritius       | Tanzania        |
| Bangladesh      | Gabon           | Mexico          | Thailand        |
| Barbados        | Georgia         | Moldova         | Togo            |
| Belarus         | Ghana           | Mongolia        | Trinidad & Tobago|
| Benin           | Guinea          | Montenegro      | Tunisia         |
| Bolivia         | Guinea-Bissau   | Morocco         | Turkey          |
| Bosnia-Herzegovina| Guyana         | Mozambique      | Turkmenistan    |
| Botswana        | Haiti           | Myanmar         | Uganda          |
| Brazil          | India           | Namibia         | Ukraine         |
| Brunei          | Indonesia       | Nepal           | United Arab Emirates|
| Bulgaria        | Iran            | New Zealand     | Uruguay         |
| Burundi         | Iraq            | Nicaragua       | Uzbekistan      |
| Cambodia        | Israel          | Niger           | Venezuela       |
| Cameroon        | Jamaica         | Nigeria         | Viet Nam        |
| Cape Verde      | Jordan          | Pakistan        | Yemen           |
| Chad            | Kenya           | Peru            | Zimbabwe        |
| Chile           | Korea, Dem. Rep.| Philippines    |                |
| Colombia        | Kuwait          | Russia          |                |
| Comoros         | Kyrgyz Republic | Rwanda          |                |
| Congo, Dem. Rep.| Laos            | Senegal         |                |
| Congo, Rep.     | Lebanon         | Serbia          |                |
| Costa Rica      | Lesotho         | Sierra Leone    |                |
Table A2.2: Chinese Aid, Regime Type, and the Likelihood of Leader Exit, 2000-2014

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(Model 1)</th>
<th>(Model 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boix Democracy Index</td>
<td>V-Dem: Regimes of the World</td>
</tr>
<tr>
<td>Per capita Chinese Aid (log, lag)</td>
<td>-0.302*** (0.0953)</td>
<td>-0.370*** (0.129)</td>
</tr>
<tr>
<td>Boix Dem. Index (dichotomous, lag)</td>
<td>0.202 (0.195)</td>
<td></td>
</tr>
<tr>
<td>V-Dem: Regimes of the World (lag)</td>
<td></td>
<td>0.0305 (0.128)</td>
</tr>
<tr>
<td>Per capita Chi Aid (log, L)* Boix Dem Ind. (L)</td>
<td>0.281** (0.118)</td>
<td></td>
</tr>
<tr>
<td>Per capita Chi Aid (log, L)* V-Dem Regime (L)</td>
<td></td>
<td>0.142** (0.0697)</td>
</tr>
<tr>
<td>DAC Foreign Aid (% GDP, lag)</td>
<td>-0.0173 (0.0166)</td>
<td>-0.0159 (0.0162)</td>
</tr>
<tr>
<td>Natural Resource Rents (log, lag)</td>
<td>-0.181** (0.0801)</td>
<td>-0.203** (0.0789)</td>
</tr>
<tr>
<td>Leader Age (log, lag)</td>
<td>1.214** (0.490)</td>
<td>1.117** (0.505)</td>
</tr>
<tr>
<td>Total Population (log, lag)</td>
<td>-0.101* (0.0570)</td>
<td>-0.0913 (0.0577)</td>
</tr>
<tr>
<td>GDP Growth Rate (lag)</td>
<td>-0.00281 (0.0298)</td>
<td>-0.00384 (0.0298)</td>
</tr>
<tr>
<td>Per capita GDP (log, lag)</td>
<td>-0.132 (0.107)</td>
<td>-0.128 (0.109)</td>
</tr>
<tr>
<td>Civil War (lag)</td>
<td>1.150*** (0.393)</td>
<td>1.161*** (0.393)</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.143* (2.496)</td>
<td>-3.830 (2.527)</td>
</tr>
<tr>
<td>Observations</td>
<td>1,293</td>
<td>1,294</td>
</tr>
</tbody>
</table>

Notes: Dependent variable is leader exit. Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
The above Figure (Figure A2.1) shows interactive effect (based on the estimates in Model 1 in Table A2.1) of Chinese aid on leader exit across a dichotomous measure of democracy – the Boix Democracy Index. The average marginal effect of Chinese aid (with 95 percent confidence intervals) on the probability of leader exit for various non-democracies and democracies is measured as a dichotomous variable. The figure illustrates that the interactive effect of per capita Chinese aid on the probability of leader exit is statistically significant for nondemocratic leaders and insignificant for democracies.
The above Figure (Figure A2.2) plots interactive effect of Chinese aid on leader exit using V-Dem’s regime classification. Based on Model 2 in Table A2.2, I find that the conditional marginal effect of Chinese aid on leader exit is statistically significant for non-democracies (labeled 0 and 1) but the effect is insignificant in democracies (labeled 2 and 3), which is consistent with hypothesis 2.
Table A3.1: Country Sample (Recipients of Chinese Foreign Aid 2000-2014; 122 countries)

<table>
<thead>
<tr>
<th>Afghanistan</th>
<th>Cote D'Ivoire</th>
<th>Liberia</th>
<th>Singapore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>Cuba</td>
<td>Libya</td>
<td>Somalia</td>
</tr>
<tr>
<td>Algeria</td>
<td>Cyprus</td>
<td>Macedonia, FYR</td>
<td>South Africa</td>
</tr>
<tr>
<td>Angola</td>
<td>Djibouti</td>
<td>Madagascar</td>
<td>South Sudan</td>
</tr>
<tr>
<td>Argentina</td>
<td>Ecuador</td>
<td>Malawi</td>
<td>Sri Lanka</td>
</tr>
<tr>
<td>Armenia</td>
<td>Egypt</td>
<td>Malaysia</td>
<td>Sudan</td>
</tr>
<tr>
<td>Australia</td>
<td>Equatorial Guinea</td>
<td>Mali</td>
<td>Suriname</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>Eritrea</td>
<td>Malta</td>
<td>Syria</td>
</tr>
<tr>
<td>Bahamas</td>
<td>Ethiopia</td>
<td>Mauritania</td>
<td>Tajikistan</td>
</tr>
<tr>
<td>Bahrain</td>
<td>Fiji</td>
<td>Mauritius</td>
<td>Tanzania</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>Gabon</td>
<td>Mexico</td>
<td>Thailand</td>
</tr>
<tr>
<td>Barbados</td>
<td>Georgia</td>
<td>Moldova</td>
<td>Togo</td>
</tr>
<tr>
<td>Belarus</td>
<td>Ghana</td>
<td>Mongolia</td>
<td>Trinidad &amp; Tobago</td>
</tr>
<tr>
<td>Benin</td>
<td>Guinea</td>
<td>Montenegro</td>
<td>Tunisia</td>
</tr>
<tr>
<td>Bolivia</td>
<td>Guinea-Bissau</td>
<td>Morocco</td>
<td>Turkey</td>
</tr>
<tr>
<td>Bosnia-Herzegovina</td>
<td>Guyana</td>
<td>Mozambique</td>
<td>Turkmenistan</td>
</tr>
<tr>
<td>Botswana</td>
<td>Haiti</td>
<td>Myanmar</td>
<td>Uganda</td>
</tr>
<tr>
<td>Brazil</td>
<td>India</td>
<td>Namibia</td>
<td>Ukraine</td>
</tr>
<tr>
<td>Brunei</td>
<td>Indonesia</td>
<td>Nepal</td>
<td>United Arab Emirates</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>Iran</td>
<td>New Zealand</td>
<td>Uruguay</td>
</tr>
<tr>
<td>Burundi</td>
<td>Iraq</td>
<td>Nicaragua</td>
<td>Uzbekistan</td>
</tr>
<tr>
<td>Cambodia</td>
<td>Israel</td>
<td>Niger</td>
<td>Venezuela</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Jamaica</td>
<td>Nigeria</td>
<td>Viet Nam</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>Jordan</td>
<td>Pakistan</td>
<td>Yemen</td>
</tr>
<tr>
<td>Chad</td>
<td>Kenya</td>
<td>Peru</td>
<td>Zimbabwe</td>
</tr>
<tr>
<td>Chile</td>
<td>Korea, Dem. Rep.</td>
<td>Philippines</td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td>Kuwait</td>
<td>Russia</td>
<td></td>
</tr>
<tr>
<td>Comoros</td>
<td>Kyrgyz Republic</td>
<td>Rwanda</td>
<td></td>
</tr>
<tr>
<td>Congo, Dem. Rep.</td>
<td>Laos</td>
<td>Senegal</td>
<td></td>
</tr>
<tr>
<td>Congo, Rep.</td>
<td>Lebanon</td>
<td>Serbia</td>
<td></td>
</tr>
<tr>
<td>Costa Rica</td>
<td>Lesotho</td>
<td>Sierra Leone</td>
<td></td>
</tr>
</tbody>
</table>
## Table A3.2: Chinese Aid, Regime Type, and Government Social Sector Expenditure, 2000-2014

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) Health Expenditure</th>
<th>(2) Education Expenditure</th>
<th>(3) Total Social Sector Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Aid (% of GDP, lag)</td>
<td>-0.0359</td>
<td>-0.0580</td>
<td>-0.0745</td>
</tr>
<tr>
<td></td>
<td>(0.0251)</td>
<td>(0.0394)</td>
<td>(0.0586)</td>
</tr>
<tr>
<td>Polity2 Dummy</td>
<td>0.0344</td>
<td>0.0720</td>
<td>0.166</td>
</tr>
<tr>
<td></td>
<td>(0.0863)</td>
<td>(0.143)</td>
<td>(0.213)</td>
</tr>
<tr>
<td>Chinese Aid * Polity2 Dummy</td>
<td>0.0756**</td>
<td>0.127***</td>
<td>0.170**</td>
</tr>
<tr>
<td></td>
<td>(0.0311)</td>
<td>(0.0482)</td>
<td>(0.0717)</td>
</tr>
<tr>
<td>DAC Foreign Aid (% GDP)</td>
<td>0.0412**</td>
<td>0.0204</td>
<td>0.0591*</td>
</tr>
<tr>
<td></td>
<td>(0.0193)</td>
<td>(0.0219)</td>
<td>(0.0328)</td>
</tr>
<tr>
<td>Total Population (log)</td>
<td>-2.901***</td>
<td>-4.085***</td>
<td>-6.982***</td>
</tr>
<tr>
<td></td>
<td>(1.048)</td>
<td>(0.811)</td>
<td>(1.216)</td>
</tr>
<tr>
<td>GDP Growth Rate</td>
<td>0.0115</td>
<td>-0.0167</td>
<td>-0.0284*</td>
</tr>
<tr>
<td></td>
<td>(0.00940)</td>
<td>(0.0107)</td>
<td>(0.0159)</td>
</tr>
<tr>
<td>Remittance (% GDP)</td>
<td>-0.0772</td>
<td>-0.0681</td>
<td>-0.127</td>
</tr>
<tr>
<td></td>
<td>(0.0599)</td>
<td>(0.0599)</td>
<td>(0.0891)</td>
</tr>
<tr>
<td>Nat. Resource Rents (% GDP)</td>
<td>0.00172</td>
<td>-0.00996</td>
<td>0.0371</td>
</tr>
<tr>
<td></td>
<td>(0.0349)</td>
<td>(0.0328)</td>
<td>(0.0487)</td>
</tr>
<tr>
<td>Time</td>
<td>0.0882***</td>
<td>0.0759***</td>
<td>0.146***</td>
</tr>
<tr>
<td></td>
<td>(0.0229)</td>
<td>(0.0160)</td>
<td>(0.0239)</td>
</tr>
<tr>
<td>Constant</td>
<td>48.97***</td>
<td>70.89***</td>
<td>119.8***</td>
</tr>
<tr>
<td></td>
<td>(17.18)</td>
<td>(13.29)</td>
<td>(19.93)</td>
</tr>
<tr>
<td>Observations</td>
<td>689</td>
<td>671</td>
<td>669</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
Figure A3.1: Conditional Effects of Chinese Aid on Govt. Health Expenditure (with 95% CIs)

Figure A3.2: Conditional Effects of Chinese Aid on Govt. Education Expenditure (with 95% CIs)
Figure A3.3: Conditional Effects of Chinese Aid on Total Govt. Social Sector Expenditure (with 95% CIs)
SUPPLEMENTAL TABLES AND FIGURES FOR CHAPTER 4

Table A4.1: Country Sample (Number of countries: 54)

| Albania | Angola | Armenia | Bangladesh | Benin | Bolivia | Burkina Faso | Burundi | Cambodia | Cameroon | Colombia | Comoros | Congo Democratic Republic | Cote d’Ivore | Dominican Republic | Egypt | Ethiopia | Gabon | Ghana | Guinea | Guyana | Haiti | Honduras | India | Indonesia | Jordan | Kenya | Kyrgyz Republic | Lesotho | Liberia | Madagascar | Malawi | Mali | Moldova | Morocco | Mozambique | Namibia | Nepal | Nigeria | Pakistan | Peru | Philippines | Rwanda | Senegal | Sierra Leone | Swaziland | Tajikistan | Tanzania | Timor-Leste | Togo | Uganda | Uzbekistan | Zambia | and Zimbabwe |

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RESEARCH INTERESTS
International Political Economy, Politics of International Development, Foreign Aid, International Trade, Food Security, Climate Change, Quantitative Methods, Causal Inference

EDUCATION

University of Mississippi
Ph.D., Political Science August 2022
Dissertation: Essays on Chinese Foreign Aid and Domestic Political Institutions
Committee: Susan Allen (chair), Lauren Ferry, Gang Guo, and John Gardner (Economics)

M.A., Political Science 2020
M.A., Economics 2018

University of Wyoming
M.Sc., Agricultural and Applied Economics 2013

University of Dhaka, Bangladesh
M.S.S., Economics 2007
B.S.S. (Honors), Economics, CGPA 3.85/4.00 2006

PROFESSIONAL EXPERIENCE

Graduate Instructor, University of Mississippi 2021-
Graduate Teaching Assistant, University of Mississippi 2014-
Senior Research Associate, Centre for Policy Dialogue, Bangladesh 2013-14
Graduate Research Assistant, University of Wyoming 2011-13
Senior Research Associate, Centre for Policy Dialogue, Bangladesh 2010-11
Research Associate, Centre for Policy Dialogue, Bangladesh 2008-10

RESEARCH WORK

Working Papers
“Chinese Foreign Aid and Leader Turnover: Does Chinese Foreign Aid Prop up Non-democratic Regimes?”

“Chinese Aid and Social Sector Spending: The Role of Recipient Political Institutions”
“Democracy, Public Goods, and the Onset of Civil Conflict”
“Political Economy of Debt Restructuring: Veto Players, Restructuring Duration, and Creditor Haircuts”
“Do Sovereign Creditworthiness and Foreign Aid Facilitate Arms Races?”

Work in Progress
“Which Votes Are We Buying? China and the United States in the UN General Assembly”, (with Susan Allen and Amy Yuen)
“Chinese Aid and Individual Level Well-Being: The Role of Recipient Political Institutions”
“Margin of Victory and Representation: Are Voters From Competitive Districts Better Represented?”

Journal Article
*Received The Emerald Literati Network 2012 Award For Excellence.

Book Chapters


Published Working Papers and Research Reports
*reviewed by the publishing research organization

“Prospects of Economic Cooperation in the Bangladesh, China, India and Myanmar Region: A Quantitative Assessment” (With Rahman, T) 2009. ARTNeT Working Paper Series No. 73, United Nations ESCAP and Asia-Pacific Research and Training Network on Trade (ARTNeT), Bangkok.*


“Impact of Information Technology in Trade Facilitation on Small and Medium-Sized Enterprises in Bangladesh” (with Hossain, S.S; Deb, U), 2009. ARTNeT Working Paper Series No. 76, United Nations ESCAP and Asia-Pacific Research and Training Network on Trade (ARTNeT), Bangkok.*

“The Economy of Tomorrow - How to Produce Socially Just, Sustainable and Green Dynamic
Growth for a Good Society: Case Study of Bangladesh” (with Rahman, M; Khan, TI), 2014. Friedrich-Ebert-Stiftung, Bonn, Germany.*

“Vulnerability to Climate Change: Adaptation Strategies and Layers of Resilience - Quantifying Vulnerability to Climate Change in Bangladesh” (with Islam Akm; Deb, U; Jahan, N; Ahmed, I; Tabassum, S; Ahamad, Mg; Nabi, A; Singh, Np; Byjesh, K; Bantilan, Mcs), 2013. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India.*


Policy Briefs
“Vulnerability to Climate Change: Adaptation Strategies and Layers of Resilience – Mainstreaming Grassroots Level Adaptation and Building Climate Resilient Agriculture in Bangladesh” (with Deb U, Ahamad M.G., Islam N., Khaled N., Nabi A., Bantilan C., Singh N.), ICRISAT Policy Brief No. 21, ICRISAT, India.


Op-Eds

TEACHING EXPERIENCE - UNIVERSITY OF MISSISSIPPI
Instructor
POL 103: Introduction to International Relations (Summer 2021)
POL 103: Introduction to International Relations (Spring 2022)

Guest Instructor
POL 550: Research in Politics (Fall 2018)
Teaching Assistant - Graduate Courses
POL 550: Research in Politics (Fall 2018, Fall 2020)
POL 551: Empirical Political Analysis (Spring 2021)

Teaching Assistant - Undergraduate Courses
POL 251: Introduction to Political Science Methods (Spring 2019)
POL 103: Introduction to International Relations (Fall 2019, Spring 2020)
POL 101: Introduction to American Politics (Fall 2020, Spring 2021)
POL 398: The Politics of Nuclear Weapons (Spring 2020)
POL 300: Judicial Process (Spring 2019)
ECON 202: Principles of Microeconomics (Fall 2014-Fall 2017)
ECON 398: Intermediate Microeconomics (Spring 2018)
ECON 324: Experimental Economics (Spring 2018)

Tutor - Economics Tutoring Center
ECON 302: Economic Statistics II (Fall 2016, Spring 2017, Fall 2017, Spring 2018)

HONORS, AWARDS, AND GRANTS
Graduate School Dissertation Fellowship Award, University Of Mississippi, 2021 ($6,500)

Dwight T. Tays Scholarship, University of Mississippi, 2019 ($1,200)
“Awarded for outstanding academic standing by the Political Science Department”

Graduate Teaching Assistantship, University of Mississippi, Fall 2014-Present

Western Agricultural Economics Association Graduate Travel Fellowship ($500), 2013

Agricultural and Applied Economics Graduate Student Travel Grant, University Of Wyoming ($350), 2013

Graduate Research Assistantship, University of Wyoming, Fall 2011-Summer 2013

Awarded Funds by the Canadian International Development Agency (CIDA) to attend in a Postgraduate Certificate Program on Trade Policy and Commercial Diplomacy offered by the Centre for Trade Policy and Law (CTPL), Carleton University, Ottawa, Canada, 2010

Awarded Funds by the United Nations ESCAP for Participation in a Workshop for Trade Research on Gravity Modeling Held at Bogor, Indonesia, 2009

Awarded Funds by the WTO and United Nations ESCAP for participation in a Capacity Building Workshop for Young Researchers of Asia-Pacific Region held at Phnom-Penh, Cambodia, 2008

United Nations ESCAP-ARTNeT Post Workshop Research Grant, 2008 ($1,000)

Merit Scholarship, University of Dhaka, Bangladesh, 2001-2007
INVITED TALKS


CONFERENCE PRESENTATIONS


Midwest Political Science Association Annual Conference, Chicago, IL, 2022. Paper: “Which Votes Are We Buying? China and the United States in the UN General Assembly” (with Susan Allen and Amy Yuen)


Western Agricultural Economics Association Annual Conference, Monterrey, CA, 2013. Paper: “Agricultural Land-Use in a Changing Climate: Implications for Waterfowl Habitat in Prairie Canada” (with Benjamin Rashford, Christopher Bastian, and David Aadland)


Special conference on Climate Change titled “Climate Change and Bangladesh Development Strategy: Domestic Tasks and International Cooperation”, organized by Bangladesh Paribesh Andolan (BAPA) and Bangladesh Environment Network (BEN), Dhaka, 2009. Paper: “Climate Change and Rice Production in Bangladesh: Implications for Research and Development Strategy” (With Uttam Deb)
SERVICES TO PROFESSION

Ad Hoc Journal Reviewer
Foreign Policy Analysis
International Studies Perspectives

Organizer/Volunteer
Volunteer, International Studies Association-Midwest Conference, 2020
Co-organizer, Political Science Graduate Student Methods Boot Camp (University of Mississippi, Fall 2020, Fall 2021)

PROFESSIONAL TRAINING
Completed a postgraduate certificate program on “Trade Policy and Commercial Diplomacy” offered by the Centre for Trade Policy and Law (CTPL), Carleton University, Ottawa, Canada.

Completed a short course on “Input-Output Analysis, Social Accounting Matrix And CGE Modeling”, Organized by the CPD and the CMI, Bangladesh.

Completed a short course on “Cropping System Models” offered by ICRISAT, India and the University of Florida, USA.

METHODS TRAINING AND TECHNICAL SKILLS

Statistical and Other Software: RStudio, Stata, SAS, SPSS, EViews, MS Excel, MS Access

Computer Languages: R, MATLAB, GAMS, LaTeX, Python (Beginner), SQL (Beginner)

Spatial Analysis Software: ArcGIS

LANGUAGE
English (fluent), Bengali (native), Arabic (intermediary), Hindi (primary)

PROFESSIONAL MEMBERSHIP
American Political Science Association
International Studies Association
International Political Economy Society
The Society for Political Methodology
Bangladesh Economic Association