A Multi-Method Analysis of the impact of Chinese non-concessional finance in Africa

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Abstract

Over the past decade Chinese financial flows to Africa have increased considerably. As part of these flows, China has distributed non-concessional loans totalling $300bn (USD) across the continent. The scale of this financing has encouraged academics and policymakers alike to question the motivations behind Chinese lending, and more specifically whether the distribution of non-concessional finance reflects a similar set of conditions to the institutionalised multilateral-lending of the IMF and the World Bank. Simultaneously, attention has been directed to the protracted impact of Chinese lending on recipient states. Prompted by these questions, using an original panel dataset of 352 observations, this paper investigates the impact of Chinese lending on good governance across 35 African countries over a time-period of 10 years. To measure this relationship several Panel Linear Models (PLM) and Generalized Additive Models (GAM) were estimated. Results from the regressions provided no evidence for an association between greater levels of Chinese lending and worsening governance metrics. Albeit, after introducing a new variable for whether states had received Chinese loans in a given year, the models indicated that the receipt of Chinese loans is associated with a decline in good governance. In contrast the effect of receiving IMF loans is far less impactful on governance metrics. Overall, the empirical results produced by the panel regressions suggested that the relationship was far more complex than first assumed. Following this, the findings were applied to a brief case-study of past Chinese lending activity in Mozambique. The case-study confirmed that Chinese lending was indeed different to multilateral-lending, but also reiterated the need for policymakers to carefully understand the conditions upon which China supplies credit. Ultimately, by drawing upon both quantitative and qualitative insights, it was clarified that state-level governance is affected by innumerable factors. As such, establishing a direct correlation between Chinese lending and governance is problematic.

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List of Abbreviations

AIIB – Asian Investment and Infrastructure Bank

CARI – China in Africa Research Initiative (John Hopkins School of Advanced Study)

CDB – Chinese Development Bank

ECF – Extended Credit Facility

EXIM – Chinese Export and Import Bank

FDI – Foreign Direct Investment

GAM – Generalized Additive Model

IFI – International Financial Institution (E.g. IMF & World Bank)

IMF – International Monetary Fund

IO – International Organisation

LM – Lagrange Multiplier

MDB – Multilateral Development Bank

OBOR – One Belt One Road (or BRI initiative)

ODA – Official Development Aid

OOF – Other Official Flows (Non-concessional)

OVB – Omitted Variable Bias

PLM – Panel Linear Model

PPP – Public Private Partnership

REML – Restricted Maximum Likelihood

SBA – Standby Arrangement

SCC – Spatial Consistent Correlation

SOE – State Owned Enterprise

WB – The World Bank

1. Introduction

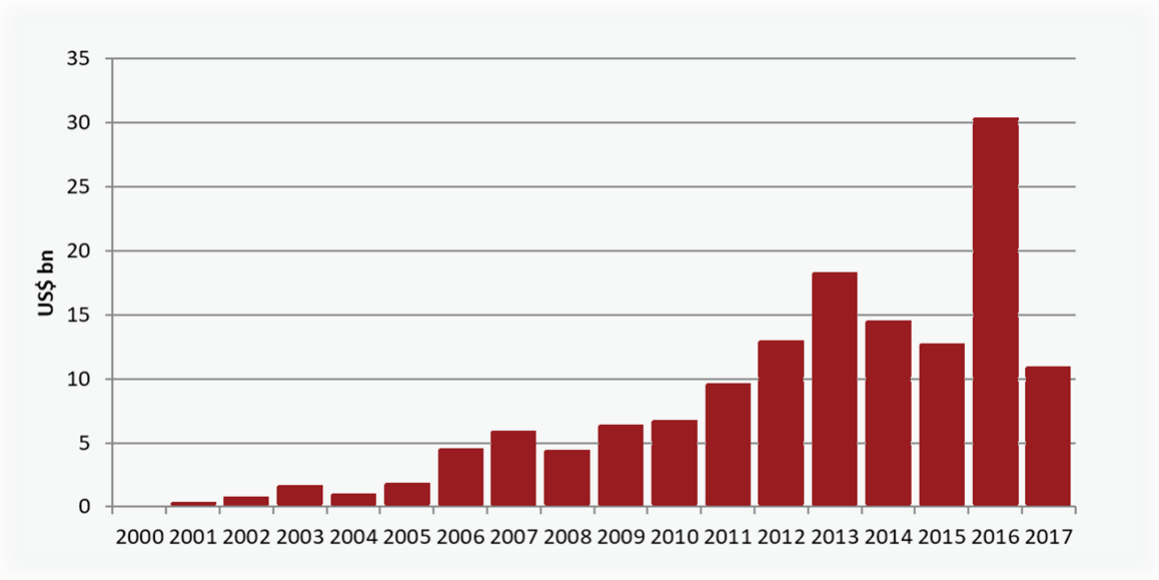
Chinese lending to African states has been a topic of extensive interest in recent years. Such interest is in part due to the size of the credit China has committed to the continent, with some studies (CARI) estimating this to be in the region of $173bn, and others (AidData) claiming it to be as high as $300bn. Aside from the considerable speed at which Chinese finance has entered Africa, focussed attention is also thanks to the nature of China's financial behaviour, in particular the notion that China issues loans to poorly governed states, saddling them with mountains of debt. Whilst the critics of China's lending programmes have claimed this to be true, no noteworthy research as of yet, has verified it.

The above is not to say that China's lending programmes have been entirely harmful. Rather they have provided a number of benefits to African states; including the availability of credit to finance extensive infrastructure projects such as roads, railways and government buildings, accompanied by the funds to relieve the severity of budgetary related issues and boost poor economic growth rates. In recent years, Chinese finance, which is distributed through three main institutions; the China Export-Import Bank (EXIM), China Development Bank (CDB) and the Asian Infrastructure and Investment Bank (AIIB) has increased considerably. This is likely to have been an outcome of Xi Jinping's flagship; 'One Belt One Road Initiative', a huge infrastructure push aimed at connecting China, by land and by sea, to a number of emerging economies. OBOR, which is expected to cost in the region of $1 Trillion USD, has repeatedly been used as an indicator of the ambitions of the Chinese state in regard to expanding its economic and political influence across the African continent.

With this, China has become one of the more important actors in the international financial system, directly challenging traditional multilateral institutions such as the IMF and the World Bank. However, China's increasing influence on the continent has not come without controversy, raising concern on a number of fronts among the leading IFIs. The rate at which China has lent (see Fig.1) has encouraged analysis of the conditions at which China provides credit to African states. Specifically whether the lending requirements are based upon similar conditions as IMF and World Bank loans mandate, or for that matter, entirely different conditions. Alongside this, concerns have also been raised over which states China opts to finance, with research suggesting that China, unlike western institutions, makes no differentiation between poorly and well governed states when distributing public finance. The unease among leading IFIs also stretches to the concessional demands that China makes upon

African states. In particular, the perception that China provides 'quick and easy' loans in exchange for access to natural resources, and or, for the award of infrastructure contracts. Together, these concerns have prompted a discussion on the impact of Chinese lending on the quality of governance at the state level.

Figure 1: Chinese lending to Africa since 2000



Source: CARI

1.2 Research Question

For almost two decades, the development of African states has been at the forefront of the policy agenda of multilateral institutions. The extent to which this influence has waned at the expense of new actors such as China, has prompted swathes of research. However, decidedly less consideration has been given to the possibility that increasing Chinese influence over time, may have undercut the development objectives of leading IFIs in regard to the good governance of African states (Samy, 2010; Callaghan and Hubbard, 2016). This justifies a closer examination of whether the distribution of Chinese finance undermines the efforts of leading IFIs to promote 'good governance'.

Addressing these debates, this paper will be one of the first to examine whether Chinese lending programmes, affect the quality of governance in 31 African states between 2006 and 2016. The leading argument is that although critics of Chinese lending programmes are right to voice concern over the conditions on which China provides credit upon, there is little justification for the notion that the receipt of Chinese credit is directly correlated with a decline in the quality

of governance. Nevertheless, Chinese loans, when compared to IMF and World Bank loans, are expected to undermine the efforts of western institutions to reward 'good governance' via the mechanism of conditionality. Moreover, China's demands for infrastructure contracts and large scale PPPs in exchange for provision of credit is also expected to be correlated with worsening governance scores.

1.3 Approach

The study, which employs panel data modelling methods, works with a manually-coded dataset of 330 observations to measure whether Chinese loans are associated with changes in the quality of governance at the country-level over a 10 year period. Panel data is preferred for this study as besides from enabling closer examination of variation in a complex relationship, it is also a powerful tool for controlling for types of omitted variables that differ across entities but remain constant over time (Stock and Watson, 2015). To explore the relationship describe above, Fixed-Effects Linear Panel Models (PLM) were estimated. However, as the results of the initial PLM tests produced ambiguous results several Generalized Additive Models (GAMs) were also estimated. As GAM models address the pertinent limitations of the typical PLM models, and therefore tend to capture non-linearity more effectively, they provided a number of important insights, and were consequently included in the final analysis. To supplement the quantitative analysis, a short case study was micro-analysed to better understand whether Chinese lending programmes impact the governance norms prescribed by the international-development community.

1.4 Aims and contributions

The aim of this paper is to provide focussed analysis on the impact of Chinese lending on the quality of governance in African states. In doing this, the study attempts to make sense of what is, a multifaceted topic of China's far reaching political and economic engagement with Africa. The secondary aim of this study is to address the literature's noticeable methodological shortcomings. That is, through acknowledging the data limitations that accompanies almost all study of Chinese financial activity, an important contribution is to provide an original dataset that is easily replicable for use in other studies.

Moreover through combining statistical analysis with qualitative methods, the study purports to demonstrate the importance of mixed methods research-designs in providing credible insights into more complex associational relationships in international political-economy

research. Certainly, there is a distinctive dearth of mixed-method analyses' that employ Chinese financing as the primary explanatory variable of interest. On the contrary, studies have tended to be either large-N statistical tests that fail to provide robust conclusions, or single case-studies that produce generalizable conclusions. Albeit, this study does not claim to remedy this shortcoming within the literature, but rather to contextualize the findings produced by the regressions with a micro level case-study. Accordingly, the leading objective is to provide a greater understanding of the relationship between China and Africa on a macro and micro level.

The final objective of this paper is entirely theoretical. It aims to position Chinese lending in contrast to the lending activity of the IMF and the World Bank. In doing so, emphasis is placed on 'comparison' rather than 'fixation' in regard to Chinese financing. The merit of a quantitative comparison with the lending activity of traditional multilateral agencies is the production of a more accurate understanding of the effect that Chinese lending has on domestic governance. Furthermore, far too many research papers have isolated Chinese financial activity as an innately negative source of influence in regard to African development, this paper taking an objective approach seeks to carefully examine such claims.

2. Literature Review

2.2 Loans and their conditionality: The IMF and the World Bank

For the past three decades the IMF and the World Bank have dominated global economic governance. The total dominance of the two leading IFIs begun in the midst of subsequent economic crises. Following the global oil-shock of 1973, and the Latin-American debt crisis of the 1980s, much of the developing world, cash strapped, and heavily indebted were left with little choice but to turn to multilateral agencies for short-term loans. As research has shown, multilateral lending, considered by many (Vreeland, 2007; Stone, 2004) as one of the more controversial instruments practiced in the international economy, had only taken place intermittently prior to Bretton-Woods. According to Rodrik (1995) lending had certainly not been practiced in an institutionalised manner. Indeed, several global economic crises', forced the IMF to strengthen its lending capacity and make credit more readily available to low-income states (Ionescu, 2013). Likewise, as Moser and Sturm (2011) have suggested; "favourable economic and political factors" saw the prominence of the IMF and World Bank surge, as well as the volume of policy-backed loans being allocated to developing states.

Unsurprisingly such conditions stimulated the production of a large body of research that has sought to analyse the wider effects of IFI programmes.

Predominantly the policy-based lending of the IMF has been delivered in the form of two main non-concessional loan packages, those are the extended-credit facility (ECF) and standby-arrangements (SBA). The ECF and SBA loans are provided at a market-based interest rate and are based on liability on behalf of the recipient state to pay the fund back within a three-year time-period (IMF, 2018). However, as agreed upon by a number of studies; (Stone, 2004; McKeown, 2009), the most contentious element of IMF loans, is that recipient governments must implement specific structural economic and political changes as necessitated by the conditionality clause. Defined formally, conditionality is the practice of offering financial assistance contingent on the enactment of specific policies (Dreher, 2009). The consequences of IMF conditionality has spawned a vast body of research, most of which identifies the structural-adjustment programmes that followed the Washington-consensus as a possible explanation for the varied results. SAPs required states that entered into IMF lending packages to implement top-down structural reform, including trade and current-account liberalisation, as well as a reduction in government spending. Within the literature the programme's success is rigorously debated. Although some studies have argued that adjustment had a positive impact on certain economic indicators, such as balance of payments, inflation and public-debt records (Gylfason, 1987), the results of existing empirical research have provided strong evidence that SAP programmes largely failed in their aims (Easterly, 2003). In particular, Vreeland (2003) and Owen (1994) have shown that the level of public employment and income inequality worsened. Other studies have explored the effects of SAPs on domestic governance. For example; Abouharb and Cingranelli (2004) shown that SAP programmes worsen human-rights records in recipient countries, whilst Hartzell and Hoddie (2010) demonstrate that there is correlation between the onset of civil-war and the adoption of IMF structural adjustment, although this association has been refuted with empirical evidence from Gleditsch et al (2011).

2.3 The move towards 'good governance'

Reflecting lessons learnt in regard to the earlier lending packages, the Bretton-Woods institutions began to alter their ideological stance toward state led development. The neoliberal-reform agenda was hastily abandoned as IFIs accepted that privatization and deregulation was

not the most appropriate policy advice to provide developing states. Influenced in part by prominent academics such as Fukuyama, and in part by the unexpected success of the Asian-TIGERS developmental model (Chang, 2004), the leading multilateral agencies came to realize that a well-functioning market requires well-functioning state-institutions (Dijkstra, 2018). According to the IMF (1997) the new approach was aimed at placing emphasis on the quality of governance, through the maintenance and support of strong public institutions. The literature has termed the policy reforms as measures to promote the 'good governance of public-affairs' (Birdsall and Fukuyama, 2011). However, the term good governance is somewhat problematic and has caused disagreement among the literature as to exactly what it entails. Dijkstra's (2018) study on the aggregated effects of multilateral aid cofounds this, stressing that there is no universally accepted definition of good governance. Dollar and Svensson (2000) although abstaining from providing a specific definition, do suggest that it is merely another way of characterizing the states 'institutional quality'. On the other hand, Kaufmann et al (2010) argue that while an exact definition can be debated there are certain indicators that are prerequisites for good governance. In particular, they highlight government effectiveness, regulatory quality and rule of law. Kaufmann's (2002) findings also provided the rationale for the construction of the World Bank funded WGI dataset, a resource that has been undeniably popular for use in quantitative research designs that measure governance quality at the country-level.

Whilst existing empirical research has mapped out the rationale behind good governance, considerably less has explored the mechanisms by which good governance is promoted through multilateral-lending facilities. It has been alleged that leading IFIs approach the conditionality clause as an instrument by which to promote governance reform. Indeed, in a 2011 white paper, the IMF underlines the fact that it includes good governance conditionality in all non-concessional loans. Thus, as suggested by Dreher (2009) conditional lending is employed to encourage poorly governed states to pursue a policy reform path they otherwise would not have chosen. On other hand, it has been argued that IFIs, which as institutions that are dependent on key stakeholders (i.e. donors), remain cautious of receiving the principle amount after the loan liability period has expired (McKeown, 2009). Hence, conditional loans are distributed more readily to countries with well-established institutions and a higher quality of governance, while countries that are perceived as 'too risky' face a struggle to access credit (Mwase, 2011; Moser and Sturm, 2011). More precisely, Hernandez (2017) shows, with panel data for 54 African countries, that the leading multilateral agencies approach to conditionality was a means to 'safeguard' their sunk investment from corrupt practices. Rather they opt to withhold

investment until good governance reform is pursued, after all the IMF is a lender that needs "assurance that it will be repaid" (Khan and Sharma, 2001). These findings are indicative of the fact that agencies such as the IMF have the intention of effecting particular states ability to pursue sound economic and public policies to protect its own financial interests, alongside the objective of promoting good governance outcomes.

2.4 China in Africa

Chinese finance entered Africa almost two decades ago, and has proceeded to grow at an unprecedented rate. Since then a burgeoning literature, both quantitative and qualitative has attempted to examine such extraordinary financial interest. Generally speaking, the literature fails to reach an agreement on the importance of Chinese finance in Africa. As an example, Humphrey and Michaelowa (2019) whilst acknowledging the rapid growth of Chinese finance in Africa, are certain to downplay its impact compared to traditional financial institutions. On the other hand, Sun (2014) has argued that China's recent financial activity has positioned it as the main rival to leadings IFIs. Nevertheless, owing to the Chinese government's unwavering commitment to the 'Belt and Road' initiative, research which focusses on Chinese financial activity in Africa has gained traction in recent years. OBOR which is expected to generate a number of commercial contracts for African economies and is principally funded by the Asian Infrastructure and Investment Bank (AIIB), has quickly generated concerns that it facilitates corruption, malpractice, and a disregard for international norms (Wang, 2015; Yu, 2017). Furthermore, as Callaghan and Hubbard have suggested, it is the strategic interests of the AIIB, specifically in regard to which states it opts finance that alarms western financial institutions. Although existing research has failed to come to an agreement as to the exact impacts of Chinese financial activity in Africa, the overarching theme amid the literature is one of subtle scepticism.

China's financial activity in Africa, which is estimated to be in the region of $750bn, can be split into three broad spheres (excluding trade flows); foreign direct investment (FDI), development assistance (ODA) and non-concessional lending (OOF). Although the concentration of this paper is on the latter, it is also important to consider the other two financial instruments that China uses to engage with Africa. The justification for this, is that as China tends to act collectively in terms of the allocation of its outward capital-flows, the strategic interests of the government can be better contextualised through a brief discussion of each.

Recent research has closely examined all three elements of China's financial interests in the region. Unsurprisingly, the bulk of this research has focused upon the most widely dispersed source of Chinese capital in Africa, which is FDI. Much of this research has used aggregate FDI panel-data to examine both the determinants, as well as the impact. Although the results of this empirical research have been somewhat inconclusive, a number of studies have found that China's investment character is unconcerned by the institutional and political constraints that western investors are phased by (Chan, Dollar & Tang, 2016). Other studies (Zhang and Daly, 2011; Strange et al 2015) using similar data, have indicated that Chinese outward flows are drawn more to natural resource endowments rather than quality of governance.

Departing from the deliberation over Chinese FDI in Africa, existing research has also applied similar questions to analysis of China's ODA. Dreher et al (2015) note that the rising influence of non-traditional aid donors, particularly China, has prompted a growing literature. For instance, the AidData institute which tracks Chinese ODA flows has published a number of papers (Dijkstra, 2018; Guillon and Mathonnat, 2018) focussed both on the determinants and the impact of Chinese ODA & OOF flows. Amid this trend Dreher et al (2018) has attempted to understand why China has given so much ODA to African states in recent years. Supported by findings from Brautigam (2009) and Tan-Mullins (2010) the studies main finding, is that Chinese aid is used as an instrument to cement alliances with political leaders to secure access to commercial opportunities for Chinese firms across Africa. Research has also analyzed the impact of Chinese aid; Dreher et al (2017) have suggested that it results in a 0.2% increase in economic growth, but argue that certain democratic indicators decline. This latter prediction is supported by Kersting and Kilby (2014) who show that aid is correlated with a fall in recipient states Freedom House score. Other studies have considered the impact of ODA flows on specific governance variables such as corruption and rule of law; Isaksson and Kotsadam (2018) who also employ AidData do not find an association between Chinese ODA and state corruption per say. However, they do argue that Chinese aid backed infrastructure-projects, by means of 'norm transmission', tend to induce both higher corruption, and depressed labour-standards at the firm-level.

In contrast to research on Chinese ODA, studies on Chinese non-concessional lending programmes are far less developed. As Brautigam (2015) has indicated, this is due to data limitations on behalf of the Chinese government, which releases no official record of loan finance. Albeit, in recent years AidData and CARI have taken successful steps in building

respective databases that track Chinese financial flows to African states. Following a number of studies (Brautigam, 2015; Landry, 2018), this paper employs data from CARI to code the independent variable of interest; Chinese loans.

Existing research on Chinese lending has mostly focussed upon its determinants as opposed to its impact. Dreher et al (2018) and Landry (2018) refute a number of myths that surround Chinese financing, arguing instead that there is little basis for claims that China engages in 'predatory' or 'rogue' lending. Albeit, both papers also find that Chinese finance is drawn to states that consistently score high corruption and low rule of law scores; a finding which is supported by Dollar (2018), who argues that Chinese lending is indifferent to risk, in particular indices of political stability and governance quality. Nonetheless, the extent to which Chinese lending worsens governance outcomes has received some attention but with little empirical support as of yet. The studies that have purported to examine the impact of Chinese lending, have focused on making projections rather than evidence based conclusions.

Another key issue addressed by the available literature is that of debt sustainability, and whether African countries are able to pay back the principal amount to the Chinese state. Humphrey and Michaelowa (2019) draw attention to China's willingness to lend at 'non-concessional' rates to states that are classified as 'concessional' by the IFIs. Furthermore, Horn and Reinhart (2019) have argued that countries (which may, or may not have governance related issues) which have borrowed heavily from China are at increased risk of debt-distress, they note Djibouti and Zambia as instances of this. The possibility of a debt-crisis, induced by Chinese lending, has prompted the publication of several studies (e.g. Callaghan and Hubbard; Drysdale et al, 2017). Recent research has also begun to question whether Chinese loans include a conditionality clause (Kilby, 2009; Hernandez, 2017). Although at this stage a full understanding of the exact conditions and liabilities at which China provides credit to African states is unclear, Greenhill (2017) finds that there has been a surge in demand for credit with fewer conditions attached to it since China has entered the international finance scene. Such a conclusion is supported by Killick (2005) who maintains that the number of conditions attached to IMF arrangements has declined in recent years. It is not therefore, inconceivable that China is challenging international finance norms, and significantly, the supply of conditional credit as a reward for pursuing good governance outcomes (Dreher, 2009; Wang, 2015).

Recognising the advances that research into Chinese finance has made in recent years, this paper seeks to continue the trend. In doing so it also attempts to fill the surprising, yet obvious gap in the literature, specifically the impact of Chinese lending on state level governance in Africa.

3. Theoretical Mechanisms

In light of past research there are valid reasons to believe that non-concessional loans from China could threaten good governance in African states. There are several important mechanisms that could produce this outcome, significantly, the specified mechanisms stem from analysis of the conditions upon which China distributes finance.

3.1 China, challenging IFI conditionality?

The inclusion of the conditionality feature in IFI programmes has long been a point of contention among academics and policymakers, and is a significant determinant in a state's decision to seek finance from multilateral agencies. Accordingly, "micro-managed conditionality" deters countries from turning to the IMF and the World Bank for funds (Dreher, 2009). The foremost reason for this is that it restrains the recipient government's capacity to make political decisions in its own interests (Hernandez, 2017). Take for instance corruption reform; suppose an IFI wants to safeguard its sunk investment, it may demand that the state makes top-down structural reform to clamp down on pervasive corruption. On receiving the loan, the borrowing state is obligated to ensure that it does not deviate from its new anti-corruption policy. The changes in government policy are monitored by the creditor (IFI), which subjects the debtor (borrowing state) to regular policy check-ups (Rodrik, 1995). However, it simply may not be in the interests of the ruling government to implement corruption reform, rather it may intend to maintain a system of rent-seeking and patronage. Such intent was illustrated by the Egyptian government, when it opted to reject an IMF loan-package worth $3.1bn as it required "greater transparency in public finances" (Hernandez). Certainly, IFIs have also approached conditionality as a way of binding states to make credible commitments (see Leeds, 1999), which according to Dreher (2009) has the effect of making it more difficult for states to change policies in the future. Indeed, states favour flexibility in policymaking, and building upon Feldstein's (2004) critique of IFI policy-backed loans, it can be argued that rational states will look to avoid the political and economic constraints of conditionality wherever possible.

As has been established in section 2.1, in contrast to IFI programmes, Chinese non-concessional lending does not mandate states to make good governance style political reforms,

thus enabling governments to maintain autonomy in policymaking. Undoubtedly, the opportunity to maintain policy-leverage forms a rationale for the supply of Chinese loans (Dreher and Fuchs, 2015). There is also the notion that many recipient states view conditionality with resentment, and as a "threat to national sovereignty", suggesting that IFI lending procedures are virtually an inconvenience to developing states (Hernandez). In light of this, it is argued that little to 'no conditionality' serves as a 'pull factor' in regard to a state's decision to seek public finance from China (Brautigam and Gallagher, 2014). In effect there is increased competition for the supply of loans, with Chinese credit likely to be a welcome alternative for indebted states. A real-world example of this involves a series of decisions made by the Angolan government following the 2002 civil-war. The Angolan government, seeking to finance large-scale reconstruction projects, took the unexpected decision of rejecting IMF loans that contained structural-adjustment measures, in favour of credit from China (Naim, 2007). Ultimately, this marked the formation of a financial relationship worth $14.5bn over a 7 year period. Such a relationship demonstrates the mechanism proposed above, and is typical of many other cases involving African governments and China. Consequently, the receipt of Chinese finance is likely to undermine good governance conditionality, prompting the following prediction:

> ***H1:*** *African countries that receive higher amounts of Chinese loans are likely to have lower good governance scores*

3.2 China's lending character

The second mechanism proposed by this study is that the financing objectives of the Chinese state may undermine the efforts of western institutions to reward good governance. As statistical evidence has shown (Brautigam, 2015), China displays no bias towards country's with a higher quality of governance when distributing finance, in fact Chinese credit is uncorrelated with indices of 'political stability' and 'rule of law' (Dollar, 2017). Moreover, China provides credit to states that consistently exhibit poor governance, a practice that leading IFIs refuse to engage in (Humphrey and Michaelowa, 2019). As Dollar suggests, Chinese loans have presented a ground-breaking opportunity for those states traditionally unable to access non-concessional loans from IFIs. Up until the recent arrival of new financiers, developing states had no choice "other than compliance" when seeking financial assistance from western IFIs (Gilpin, 2001). The significance of this is paramount, primarily because poorly governed/authoritarian African states have the chance to access finance from China, they no

longer have to pursue good governance reforms to meet the borrowing conditions set by leading IFIs (Samy, 2010). Therefore led by the assumption that the option of Chinese finance reduces the demand for IFI policy-based loans, the leading expectation is that; Chinese lending is correlated with a decline in the rate of African states making good governance style reform.

Moreover, on a normative level, if China disproportionately engages with poorly governed states compared to western IFIs, it is reasonable to suggest that China is validating, if not sustaining the continuation of poor governance. As aforementioned, key elements of good governance such as; the efficient management of public-financing may be ignored by China, as not fundamental to their overall strategic interests in respect to wider relations with the borrowing state. It is well known that transparency and accountability in budgeting is likely to be a crucial component of IFI policy conditionality, particularly when loans are provided on the basis of policy stabilization and structural-adjustment (Diwan and Rodrik, 1992; Sachs, 1989). Given this, it is unsurprising that China has been labelled a "rogue lender" (Naim, 2009). In short, China's practice of lending to countries with high corruption, low-accountability and authoritarian tendencies is expected to prolong poor governance while undermining the specific and targeted development objectives of leading IFIs (Dreher et al, 2017; Landry, 2018).

Notwithstanding the above, the outcome of a fall in governance quality is expected to be dependent on sustained access to credit over a period of time. If an African government receives loans from China in one year, but not in in other years the mechanism is unlikely to come into effect. States that have consistent access to IFI finance as well as Chinese finance, are seemingly less inclined to compromise their reform programmes. Whereas repeated interaction with the Chinese state is likely to reduce the need for African countries to seek IFI finance, which therefore reduces the probability that the state will pursue good governance reform. Following Landry's (2018) findings that China distributes finance more frequently to states it has "deep economic ties" with, it is assumed that China approaches financing as a way to promote its commercial interests, rather than promote any governance reform as the western IFIs mandate. The second testable prediction is therefore:

> ***H2:*** *Compared to IMF loans, the receipt of Chinese loans is more likely to worsen good governance.*

3.3 No strings attached?

A final mechanism through which Chinese lending could produce poorer good governance outcomes is drawn from analysis of the prearranged economic and political demands that China, in its position of relative leverage, places upon borrowing states. It is well known that China practices 'non-interference' in respect to the economic and political affairs of the recipient state (Dreher, 2011). Nevertheless, it is assumed that China's 'no conditionality' approach to lending, is accompanied instead, by the procurement of exclusive concessions. As collateral for the provision of quick credit, rather than including policy-based conditionality, China forces demands that range from gaining access to natural resource flows to acquiring large scale infrastructure contracts. Indeed, empirical evidence has consistently found that Chinese loans are drawn to countries with high natural resource endowments. By comparison, Brazys (2018) shows that there is a consistent link between Chinese finance and the subsequent use of Chinese labour to complete infrastructure contracts in borrowing African states. These arrangements are a common feature of loan-packages, and it has been widely reported that Chinese non-concessional finance is partly based on the delivery of infrastructure projects if the debt-liability is not met by the borrowing state (OECD). There are countless cases of Chinese loans being used to secure exclusive concessions; for example, in 2008, a loan negotiation between China and the government of Congo resulted in the award of a mineral concession in exchange for $9.2bn worth of infrastructure development (Jansson, 2011). A similar arrangement was made between Nigeria and the Chinese EXIMBANK, where a line of credit worth $2bn was issued at a commercial rate in exchange for the completion of oil-backed infrastructure projects (Brautigam, 2009).

There are number of governance and corruption risks associated with both the allocation and the completion of infrastructure projects. Firstly, the procurement of these contracts could be viewed as an act of 'bribery' on behalf of the Chinese government. Low-interest credit is arguably a way to influence the hand of the borrowing government to award infrastructure contracts. However, the award process often lacks transparency (Jayaram et al, 2017; Sobják, 2018), and has the effect of undermining international norms and standards in regard to the fair and transparent procurement of infrastructure contracts. Recently the World Bank[1] has proposed stricter procurement guidelines, which highlighting 'bribery' as a cause for corruption in infrastructure projects, demand that "contracts are to be won through competitive

[1] http://pubdocs.worldbank.org/en/178331533065871195/Procurement-Regulations.pdf

and transparent tender". Considering this last point, it is easy to see why the Chinese approach could be seen as a danger to international norms. This is important as the Chinese have repeatedly been accused of engaging in corruption in order to secure contracts from companies considered more 'socially responsible' (Isaksson and Kotsadam, 2018). Testing this claim the following prediction is formulated:

H3: *Receipt of Chinese loans is excepted to worsen corruption state level corruption*

Another reason why good governance could be negatively impacted, is because Chinese companies may undermine regulations in pursuit of their own interests. Several studies have examined whether infrastructure projects lead a race to the bottom in terms of regulatory standards. At the same time, the argument has been made that western backed infrastructure observes a better quality of regulation, this is known as the 'California effect' (Vogel, 1995). There are two variant arguments that can be made here; following the suggestion that China practices a policy of non-interference in respect to the existing legislation in the subject country (State Council, 2014), it can be proposed that Chinese contractors will not take decisive action to reduce corruption or to improve weak regulation. Therefore, when Chinese companies obtain infrastructure projects through lending programmes, it would be expected that they do not make the same advances as western companies to improve regulation or tackle corruption.

The second point is that Chinese contracts may reduce the quality of regulation through norm transmission, suggesting the existence of the 'Shanghai-effect' (Isaksson and Kotsadam, 2018), whereby African countries engaging with Chinese companies reflect comparatively worse regulatory standards. According to Dollar (2017) this could be an outcome of both China, and respective African governments rush to complete projects quickly and with regulatory flexibility in order to satisfy respective stakeholders. Norm diffusion could see African states internalise lower standards of labour and environmental regulation as 'spill-over' from the Chinese approach to large infrastructure projects. Consideration should also be given to the sectors that Chinese contractors operate. Significantly, China has committed $74bn in loans towards transportation, a sector that is notorious for applying lower regulatory standards, specifically in terms of labour abuses and anti-union activity. This is not to say that China is intentionally seeking to lower regulatory standards, but China's approach is different to that prescribed and preferred by western development institutions. Due to this there is sufficient reason to be believe that such an approach is a threat to good governance.

***H3A**: African countries that host a greater number of Chinese contracts will experience a fall in regulatory quality and rule of law.*

4. Research Design

4.1 Methodology

The hypotheses outlined above are tested with several regression models, the results of which are further complemented by a qualitative analysis of loan-for-infrastructure programmes in Mozambique. The case study serves the purpose of facilitating more focussed analysis of a complex relationship.

4.2 Data and variables

To explore the relationship between the supply of Chinese loans (IV) and good governance in African recipient countries (DV) an original dataset was built. The data, which was drawn from several publicly available sources is organised as panel data (cross-sectional data recorded over multiple points of time). The unbalanced panel contains 352 observations and 28 variables. The units of analysis are country/year. A full breakdown of the operationalized variables and descriptive statistics is available in the Appendix.

The 35 African countries were included in the study on the basis that data could be collected across a number of years for the dependent variable and foremost independent variables. Unfortunately, this meant that several important countries had to be omitted, notably Liberia, Libya, Malawi, Namibia and Sierra-Leone (a full list of countries included is available in appendix D). The time frame was selected owing to data restraints, in regard to a dearth of publicly available data on Chinese financial activity in Africa. The year 2006 also saw the inaugural Forum on China–Africa Cooperation, marking China's decision to intensify its lending activity in Africa.

4.2.1 Dependent variable

To measure the dependent variable for the first set of models, an original value, coded as *good_governance* was introduced. To create this variable the weighted average of the five WGI

indicators was calculated, all values range from -2.5 (weak) to 2.5 (strong). The WGI variables used were; Voice and Accountability, Political Stability, Regulatory Quality, Rule of Law and Control of Corruption. Hence the variable *good_governance* is an estimate of governance quality which also ranges from approximately -2.5 (weak) to 2.5 (strong).

The WGI indicators were employed in this study as they reflect the metrics that leading IFIs use to measure and conceptualize a country's quality of governance. Moreover, as the aim of this study is to examine if Chinese loans undermine the efforts of western institutions to promote good governance, Kaufmann's WGI is an unquestionably valuable resource.

To measure the second and third hypotheses different dependent variables were used. *Control_of_corruption* was used to measure the governments capacity and to 'crack-down' and manage petty and state level corruption. For hypothesis 3A, the variable *Reg_qual* was employed as the dependent variable, measuring the capacity for the state to implement efficient and effective regulations/legislation.

4.2.2 Independent variable I

The independent variable (IV) *Loans_Chinese*, was drawn from the CARI database, a resource that has collected information from a range of sources to record data on Chinese lending to Africa since 2000. The CARI measurement represents the annual sum of loans borrowed ($USD) at the country level. To ensure that the Chinese financial flows to Africa were captured successfully and reliably, CARI lending data was cross-checked with AidData's official Chinese finance dataset. This resource contains detailed information on Chinese lending since 2003, including the value and liability of credit borrowed, as well as the sector and project it was directed to. As with CARI, the AidData dataset has observations for 51 African countries. Notably, AidData suggests that Chinese annual lending to Africa was $15bn on average, compared to the $13.5bn that CARI shows. It is expected that there is correlation between an increase in Chinese loans and a decrease in good governance.

A binary variable, *Received_Chinese_loans* (1 if 'yes' and 0 if 'no') was also created for whether an African country borrowed from China in that given year.

4.2.3 Independent variable II

To measure H3, the variable Chinese_contracts was included. The variable captures the gross annual value (USD) of Chinese infrastructure projects and public-private partnerships in host

African countries. The variable was included as it gives an indication the volume of Chinese public-private contracts in Africa, the majority of which are large scale infrastructure projects. The data was obtained from the CARI institute, and was cross-validated with AidData results.

4.2.4 Control variables

The second main explanatory variable of this study was IMF lending. The variable *IMF_Loans* was coded either 1 or 0 depending on whether the country was under an official IMF lending programme. For a state to be considered under an IMF programme, it had to have agreed to one of the main non-concessional credit instruments; the ECF or SBA. This is important for two reasons; the first being states under these programmes will almost certainly have been placed under policy conditionality, and second, the borrowing government will have agreed to pay the principle amount back to the fund within the typical 3 year time-frame. The receipt of IMF loans is expected to be correlated with higher good governance metrics.

The studies other significant explanatory variable was *Loans_WB*. The variable captures the amount (USD) of non-concessional credit distributed annually by the World Bank.

The study also controlled for the level of democracy. The variable *POLITY_SCORE* was originally included to account for factors that could be affected by a country's regime type. However, due to superior results, *Freedom_House* was used instead. The variable measures the quality of the democratic environment, specifically the level of political freedoms that individuals enjoy.

To capture the level of accountability and transparency in governance, the variables judicial independence, internet and media censorship were also included in the models. Independent judiciaries are expected to better uphold the rule of law, a key element of good governance. The level of media and internet censorship could determine the extent to which poor governance and high corruption is scrutinised. Governments that enforce a policy of censorship are less likely to be held accountable.

To measure the extent to which the elected government and its officials determine policy outcomes, the variable *Functioning_Gov* was included in the models. The variable captures whether the decision making process is free from corruption constraints. States which score higher on this measure would be expected to have better governance metrics.

The core economic variables included were; *GDP*, government expenditure (*Govt_exp*), *Inflation_annual* and government debt (*Central_govt_debt*) as a percentage of GDP. Countries with a greater GDP are expected to have more effective governance in respect to organisational capacity, and more specifically, factors such as delineated property rights. Conversely, countries with a higher public-debt are expected to be poorly governed. The IMF employs a number of different financial instruments to relieve high levels of debt, but almost all are distributed conditional on the implementation of governance reform. It is also expected that states with higher government spending will have a more developed system of public finance management. Following from this, greater spending on state institutions could produce better governance outcomes. Net_ODA was also included to account for aid finance that a country receives, more ODA is expected to generate better governance outcomes (Sachs, 2005).

Geographical variables such as oil and natural resource rent as a percentage of GDP were also included as time invariant structural factors that could affect governance. Following Ross (2001), states that have a higher oil-endowment tend to be poorly governed; oil-rent discourages institutionalised revenue collection hindering the development of a taxation system, and therefore accountability. A similar argument can be made for other natural resources, although others (The Economist, 1977) have raised the point that natural resource endowment invokes a 'Dutch-disease', whereby mass exportation causes an appreciation in the country's currency rate.

Size of urban population was also included in the models. Countries with a high urban population tend to have a more educated population (i.e. access to secondary education) which could influence metrics such as of voice and accountability. On the other hand, high rural populations are less consolidated, and therefore more difficult to penetrate by governments and so higher levels of political instability are projected.

4.3 Data management

To ensure that the dataset was free from errors and easier to manipulate, several basic data management tasks were carried out. With the help of the *mice* package, any missing values were imputed with predicted values. As a result, there was a reduced risk that levels of variance between the imputed variables would be underestimated, as would have been the case had the values been mean imputed (Allison, 2009). While the missing values were found to be 'not omitted at random', there were no missing values in the dependent or main independent variables.

Several variables were also log-transformed to adjust for non-linearity and reduce right-skewness (Agresti and Finlay, 1997). These variables included; *GDP, Net_ODA, Loans_WB and Govt_Exp.* Log-transformation facilitated the interpretation and visualisation of several important relationships.

4.4 Model specification

To estimate the effect of Chinese loans on good governance, this paper employed two types of regressions, the linear panel model (PLM) with Unit-Fixed effects (FE), and to extrapolate non-linearity with greater accuracy, a generalized additive model (GAM). The following equation, is proposed as a general model for the PLM regressions:

$$Y_{i,\,t} = \beta_0 + \beta_1 X_{i,\,t} + a_i + u_{i,\,t}$$

$$Good\_governance_{i,\,t} = \beta_0 + \beta_1 Chinese\_Loans_{i,\,t} + \beta_2 IMF\_Loans_{i,\,t} + \beta_3 Controls_{i,\,t} + u_{i,\,t}$$

The taxonomy of the panel data model estimation is somewhat based upon the limitations of a basic linear model. Thus, following the appropriate approach to model selection when working with panel data, a Lagrange Multiplier (LM) test was conducted. The results of the test ($p=<0.05$) indicated the presence of Random Effects, allowing rejection of the *H0* of 'no variance across entities over time'. Henceforth, PLM regression was viewed as more suitable than OLS.

Owing to the likelihood that omitted cross-country differences in time-constant variables may be correlated with the dependent variable the presence of Fixed Effects was expected. Albeit, the H0 that there may be random variation across entities had to be ruled out. To confirm this, a Hausman (1978) test was run as. This indicated the inconsistency of a Random Effects model compared to a Fixed-Effects Model (Torres-Reyna, 2007).

The empirical application of Fixed-Effects enables us to control for variables that (within) countries do not change over time (Unit-FE), but it also extends to controlling for OVB from variables that change over time across countries (Time-FE). Although the Lagrange Multiplier tests indicated the presence of both Unit and Time-FE, the P-value (< 0.05) for the latter model indicated that there was no need to use Time-FE in place of Unit-FE. A result which also removed the possibility of estimating a Two-way FE models to capture the cross-sectional relationship, which given the difficulty in interpreting Two-way FE results was welcome (Kropko and Kubinec, 2018).

To ensure model robustness, the Fixed-Effects models were checked and subsequently corrected for panel data violations of cross-sectional dependence, serial-correlation and heteroskedasticity. As is expected from working with panel data, *Breusch-Godfrey* tests confirmed the assumption that the models were indeed subject to serial-correlation in the error term (affects standard-error computation). Moreover, led by the expectation that some African states could also be subject to spatial-diffusions in the form of commodity-price shocks or civil-wars, a *Pesaran* test for cross-sectional dependence was run, it indicated that the null-hypothesis of 'no cross-sectional dependence' could be rejected. To correct this violation, a spatial consistent-correlation (SCC) estimator was employed. However the SCC method besides from fixing standard errors that are robust to cross-sectional dependence, also corrected for heteroskedasticity and auto-correlation consistent (HAC) standard-errors (Stock and Watson, 2015).

Nevertheless despite adequate model selection, and robustness in terms of panel corrected standard-errors, there remain significant shortcomings in the explanatory power of the Fixed-Effects models. In particular, doubts concerning the capacity for PLM methods to effectively capture non-linear relationships. On the other hand, thanks to advances in statistical software, the application of the GAM allows for the relationship between the DV (Y) and various distributions to be analysed with more flexibility. First developed and popularized by Hastie and Tibshirani as a model that blended the properties of non-linear models with additive models, the GAM has become an increasingly popular predictive statistical tool. The theoretical rationale behind the GAM is that it relaxes the assumption of linearity by instead, assuming that the relationship is one of smoothness (Jones and Almond, 2012). GAMs achieve this by estimating unspecific (non-parametric) smoothing functions of the explanatory variables which are connected to the dependent variable by means of a link function (Wood, 2006), otherwise known as a 'backfitting algorithm'.

The main advantage of the GAM over other non-linear models such as polynomials, is that it captures non-linearity through its capacity to predict relationships in a smooth manner, while ensuring the simplicity and interpretability of a linear predictor model (Ross, 2016). In contrast, the application of polynomial regression is severely limited by way of its tendency to produce over-fitted results and its difficultly in interpretability. The points mentioned here rendered the application of GAM more suitable than both Unit Fixed-Effects and polynomial regression, and as such several GAMs were estimated.

To ensure adequate model fit, the GAMs were estimated with smoothing splines, which are formed by basis functions and represented by $f_j\,(x_j)$. Doing this this enabled the adjustment of the degree of smoothness to capture the non-linear relationship (Maindonald, 2010). However, to avoid over smoothing, which is a common caveat of the GAM, smoothing-parameters were used alongside the REML (restricted maximum likelihood) method (Ross, 2018). The main benefit of REML is that it enables inference about the degree of smoothness of the model components. The simplified GAM model equation is thus surmised as shown below:

$$Yi = B0 + f_1\,(x_i) + f_2(z_i\,) + \epsilon_i \;\; where\; \epsilon_i \sim N\,(0, \sigma^2)$$

5. Regression Results

Table 1:

DV: Good Governance	Model 1	Model 2
(Intercept)	-0.51	0.24
	(0.43)	(0.44)
Received_Chinese_loans	-0.15***	
	(0.03)	
Loans_Chinese	0.00	
	(0.00)	
LogGovExp	0.25***	0.21***
	(0.04)	(0.04)
LogODA	0.01	0.01
	(0.02)	(0.02)
LogGDP	-0.06***	-0.02
	(0.01)	(0.02)
Central_govt_debt	-0.00***	-0.00**
	(0.00)	(0.00)
Natural_resource	-0.01***	-0.01***
	(0.00)	(0.00)
Functioning_Gov	0.09***	0.09***
	(0.01)	(0.01)
Jud_indep	0.20***	0.13**
	(0.05)	(0.05)
Freedom_House	0.01***	0.01***
	(0.00)	(0.00)
Media_censorship	-0.01	0.03
	(0.03)	(0.03)
Internet_censorship	0.09***	0.07**
	(0.02)	(0.02)
Inflation_annual (spline)	3.02***	3.19***
	(9.00)	(9.00)
IMF_loans		-0.01
		(0.03)
LogWB		-0.08***
		(0.01)
Log Likelihood	-42.95	-38.78
Deviance	26.31	25.69
Deviance explained	0.77	0.77
Dispersion	0.08	0.08
R^2	0.75	0.76
Num. obs.	352	352
Num. smooth terms	1	1

***p < 0.001, **p < 0.01, *p < 0.05

5.1 Chinese lending and good governance

Table 1 displays the coefficients of the successful GAM regressions of model 1 (M1) and model 2 (M2). The models, which tested H1 and H2 outlined in section 3, estimated the effects of the

variables; *Loans_Chinese, Received_Chinese_loans, IMF_Loans and Loans_WB* on good governance. Model 1 tests the (IVs) Chinese finance, while Model 2 tests the impact of IFI finance on good governance.

The GAM regression coefficients of M1, indicate that greater Chinese lending has no substantial effect on good governance. This finding means to that we fail to reject the H0 hypothesis; that a greater amount of Chinese lending is expected to worsen governance metrics. On the other hand, the variable, *Received_Chinese_loans* has a negative and significant effect on good governance, specifically it is associated with a -0.15 unit-decrease in the good governance variable. This would fall in line with H2, that states that receive finance are prone to poorer governance. An important finding is that merely engaging with China has more implication for governance quality than receiving greater amounts of finance annually.

For the control variables in M1 and M2 a number of important insights can be drawn. In both models *Functioning_Gov* is significant and has a positive influence on good governance, implying that a better functioning government is associated with a greater quality of governance. The logged variable, government expenditure, in both M1 and M2 has both a positive and significant effect on governance. In M1 a one-unit increase in government expenditure (as a % of GDP) is associated with a 0.25 increase in good governance, while in model 2, the variable remains significant but has a smaller effect. In M1, the logged GDP had a negative and significant effect on the DV, implying that larger economies are not necessarily better governed states.

Other significant variables in M1 and M2 include, *Internet_censorship*, and *Jud_independence.* Unusually, an increase in the level of internet censorship is associated with a 0.09 unit increase in good governance. By contrast media censorship is negative, suggesting that a free-press is associated with better governance. As expected, in models 1 & 2, judicial independence was significant, and had a large positive effect on good governance. Finally, in both models the variable Natural_resource was negative and significant.

The variable *Inflation_annual* was originally included as a spline in model 1 & 2, but was substituted with, *Urban_pop* due to superior results. Although interpreting the partial effect of the smooth term is problematic as there is no single coefficient to make inference from, visualizing the component smooth functions suggests its inclusion in the model was warranted.

5.2 IMF loans and good governance

The second model which is displayed in table 1, tested the effect of the independent variables, IMF and World Bank loans. The main finding was that IMF and World Bank loans do not improve governance metrics, but in fact have a slightly negative direction of influence on the DV. Albeit, the variable *IMF_Loans* is insignificant at an adequate confidence level suggesting that further tests would be required to make any useful statistical inferences. On the other hand, logged World Bank loans is significant and has a negative (-0.08) effect on governance. These findings are surprising given the hypothesis that IFI credit is likely to promote good governance by means of the conditionality mechanism. However, this outcome could be explained as an effect of reverse causality, in that loans are directed to states with worse governance scores as a way of promoting better governance outcomes in the long-run. As such, this makes it difficult to distinguish 'whether or not' IFI loans produce desirable governance outcomes. To correct for time-delay, further tests were run with lagged IMF and World Bank loans, but the results did not change substantially. Accordingly, compared to IFI loans, Chinese finance is worse for good governance, but the expectation that IFI finance would not worsen good governance can be rejected.

Table 2 & 3:

	DV: Corruption	
	Model 3	**Model 4**
(Intercept)	-0.17	1.17**
	(0.38)	(0.42)
Received_Chinese_loans	-0.20***	
	(0.04)	
IMF_loans		-0.08
		(0.04)
LogWB		-0.11***
		(0.02)
LogGDP	-0.07***	-0.02
	(0.02)	(0.02)
LogGovExp	0.29***	0.23***
	(0.05)	(0.05)
Natural_resource	-0.01***	-0.01***
	(0.00)	(0.00)
Jud_indep	0.11	0.01
	(0.06)	(0.06)
Functioning_Gov	0.11***	0.10***
	(0.02)	(0.02)
Freedom_House	0.00	0.00
	(0.00)	(0.00)
Media_censorship	-0.08*	-0.01
	(0.03)	(0.03)
EDF: s(Inflation_annual)	2.54***	3.05***
	(9.00)	(9.00)
EDF: s(Central_govt_debt)	1.37**	0.35
	(9.00)	(9.00)
Deviance explained	0.60	0.63
Dispersion	0.13	0.12
R^2	0.59	0.62
GCV score	167.16	156.88
Num. obs.	352	352
Num. smooth terms	2	2

***p < 0.001, **p < 0.01, *p < 0.05

	DV: Corruption	DV: Reg_qual
	Model 5	**Model 6**
(Intercept)	0.40	-0.96*
	(0.49)	(0.46)
Chinese_contracts	-0.00	-0.00
	(0.00)	(0.00)
LogGDP	-0.00	0.04*
	(0.02)	(0.02)
LogGovExp	0.27***	0.19***
	(0.05)	(0.05)
Natural_resource	-0.01***	-0.03***
	(0.00)	(0.00)
LogODA	0.01	-0.03
	(0.02)	(0.02)
Jud_indep	0.03	0.08
	(0.06)	(0.05)
Functioning_Gov	0.10***	-0.01
	(0.02)	(0.02)
Freedom_House	0.00	0.01***
	(0.00)	(0.00)
Media_censorship	-0.04	0.09**
	(0.03)	(0.03)
LogWB	-0.11***	-0.05**
	(0.02)	(0.02)
EDF: s(Inflation_annual)	2.97***	3.07***
	(9.00)	(9.00)
EDF: s(Central_govt_debt)	0.69	5.81***
	(9.00)	(9.00)
Deviance explained	0.63	0.75
Dispersion	0.12	0.10
R^2	0.62	0.74
GCV score	167.74	140.60
Num. obs.	352	352
Num. smooth terms	2	2

***p < 0.001, **p < 0.01, *p < 0.05

5.3 Chinese lending and the control of corruption

Are Chinese loans associated with higher levels of corruption? Table 2 displays models 3 & 4. Hypothesis 3 is tested by M3, whilst M4 is a control model. In M3, corruption is introduced as the new dependent variable. From analysis of the model it can be concluded that states in receipt of Chinese loans are more likely to have worse corruption scores. This is apparent in the variable; *Received_Chinese_loans,* which has a large negative (-0.20,) and statistically significant effect on corruption. In M4, World Bank loans was logged and had a significant negative 0.11 effect on the control of corruption level. Whether a state was under an IMF programme was not significant but did have a downward direction of influence on the DV. These findings are fairly surprising given the fact that IFI finance is in part, distributed on the

condition that states implement corruption reform leading us to believe that states which receive such finance would be less corrupt.

A one unit increase in the functioning government variable is correlated with a 0.10 increase in the control corruption. Furthermore logged government expenditure is associated with a 0.29 unit increase on average in African states control of corruption. The fact these variables are highly correlated with low corruption is no surprise, particularly as many African states lack the adequate mechanisms to fight corruption; a highly functional government is more likely to have the financial/political resources to pass corruption reform.

However, the variables GDP, natural resources and media censorship all have a significant, and negative relationship with control of corruption in model 3. Although in model 4, logged GDP is no longer significant, when controlling for the effects of IMF and World Bank lending.

5.4 Chinese contracts, corruption and regulatory quality

The third and fourth hypotheses were tested by models 5 & 6 and are displayed in table 3. The models tested several explanatory on two new dependent variables; *Control_of_corruption* and *Regulatory_quality.* Table 3 shows the results of the GAM regressions that tested the relationship between the prevalence of Chinese infrastructure contracts and the states control of corruption. The results of the regressions show that there is no significant correlation between hosting Chinese contracts and the control corruption. The same inference can be made for regulatory quality which also has a coefficient -0.00. These findings cast significant doubt on the predictions made by H3 and H4.

The models do suggest that there is a strong association between natural resource endowment and transparency in public affairs, particularly in the design and implementation of effective regulation (Model 6). A finding less anticipated, is that a functioning government is not a significant predictor variable, whereas a one unit increase in a country's GDP is associated with a 0.04 increase in a state's regulatory capacity. GDP has no effect on a country's corruption level as shown in model 5. Furthermore, states with higher freedom scores have better regulation quality but not necessarily a better capacity to control corruption, whilst a unit-increase in the level of media freedom is expected produce greater regulatory outcomes.

To surmise, although the regressions do not indicate that there is an association between Chinese contracts and corruption, a closer look at the data through a visualisation suggested that states which host more Chinese contracts annually, will have lower corruption metrics.

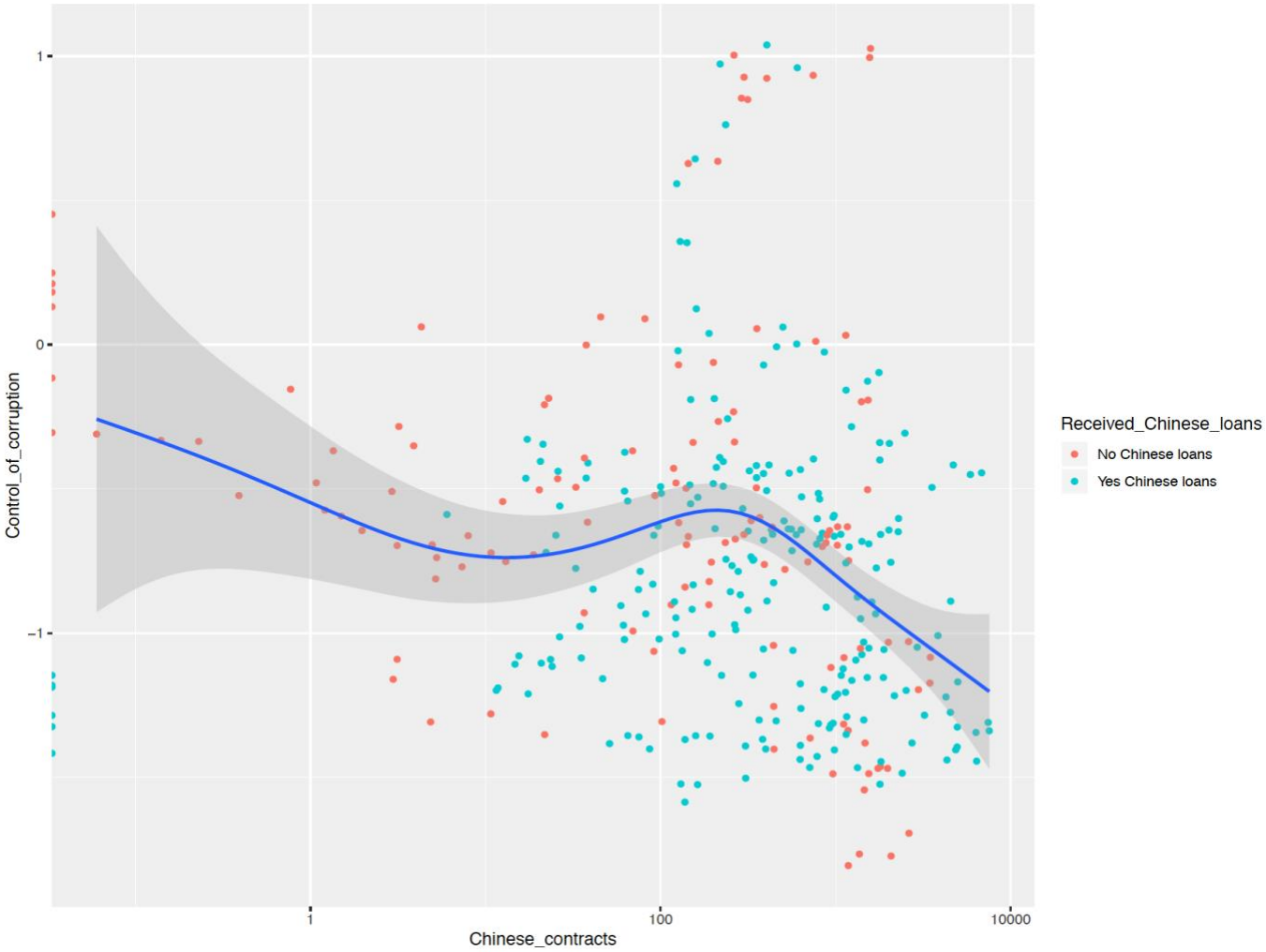


Figure 2: Graph visualizing relationship between Chinese infrastructure contracts and the control of corruption in individual African states.

The graph was plotted using GAM modelling techniques and was estimated with 10 basis smooths, as was done so in the regression models. To aid visualization, the X-axis was scale-logged using the *'ggplot'* package. The GAM plot indicates that when Chinese contracts are of greater value annually, there is likely to be a slight fall in the control of corruption level. This finding only adds to the unclear relationship of Chinese economic activity and its impact on governance metrics. The visualisation also displays whether or not a state is in receipt of Chinese credit which is useful for contextualizing H3; that China exacts contracts in exchange for the delivery of non-concessional loans. Furthermore, the plot shows there is a slight clustering of data points around the -0.5 corruption level suggesting that the control of corruption is only likely to fall once a certain amount of contracts have been received. Finally, there are also several outliers, which in future tests, could be omitted to produce more insightful results.

5.5 Model robustness and evaluation

The R2 is relatively high across all models, notably models 1 and 2 have R2 of 75.0 and 76.0 percent respectively. This would suggest that the estimated models do a good job of explaining variance of a difficult political concept. However, given the fact that every time a regressor is added to a model, the R2 increases, the high R2 scores produced by the models may be artificially inflated and therefore slightly misleading in terms of explanatory power.

To ensure that there was a robust level of smoothness and that the models did not overfit the data, all models were checked according to the function *gam.check* and *gam.summary*. The results of the tests suggested that there were an adequate number of 'basis functions' to fit the data to the model. Moreover, the large p-value indicated that the residuals were randomly distributed. This was confirmed by a residual vs fitted values plots (see appendix E) which showed no sign of a pattern. Following Wood's (2006) recommendations, there was no need to include more basis functions in a new model.

As only one model was used for each hypothesis, Wald and chi-square tests (for each individual model) rather than *ANOVA-III* tests were conducted. The tests assessed the performance of each parametic smooth and therefore the models fit relative compared to alternative models. The results of the tests, (p-value <0.05) indicated that coefficients of the explanatory variables were suitable, suggesting the overall appropriateness of the specified models against the standard robustness checks.

Model robustness was tested with the estimation of several models with alternative specifications, and variable combinations. Robustness testing also entailed estimating models with different smoothing parameters, specified splines and lag/log compositions. Model 1 was initially estimated with 2 smoother-terms, however the model output indicated that the specified parameters might have led to an 'over-fit' of the data. Due to the superior results, models 1 and 2 were estimated with 1 smoother term, in contrast models 2 and 3 were estimated with 2 smoothers producing sufficient results.

Moreover, all models were estimated with several logged variables, the inclusion of which had a significant effect on the value of the coefficients. For example logged World Bank loans was significant with a negative effect on the DV, but when kept in standard form, it had little

statistical impact. *Loans_Chinese,* and *Loans_WB* were also lagged to incorporate feedback on the statistical relationship over time. Nevertheless, the time delays made no noticeable difference to the models so were not included in the final models.

5.6 Model summary

Several generalisations can be drawn from the models. Firstly, it is clear that there is no association between greater levels of Chinese lending and good governance, meaning H1 can be rejected. In contrast there is a significant and negative relationship between the receipt of Chinese finance and good governance. In reference to H2; this would suggest that states which receive finance from China are more likely to experience a depreciation in governance quality, which given the research focus of this study, is an important conclusion. Furthermore, the regression models also showed that Chinese is lending is correlated with a decline in the control of corruption. This is particularly concerning as anti-corruption is an important element of good governance programmes, if interaction with the Chinese state undermines this, further analysis as to exactly how so is necessary.

Hypothesis 3A proposed a mechanism by which corruption levels could increase as a result of hosting Chinese contracts. The coefficients however, failed to render this relationship true, although as shown by Fig.2 there is a slight decrease in the control of corruption as Chinese contracts increase in size (USD). Hence, there is a need to contextualise these findings with better data on the scale and sectors in which Chinese/African PPPs function.

On the other hand, it is less clear as to the impact of IFI lending. It was assumed that as western finance institutions endeavour to promote good governance via conditionality, the outcome of their lending programmes would have been positive in respect to its influence on the good governance variable. Yet, the coefficients displayed above suggest otherwise, significantly both loans distributed by the IMF and the World Bank are associated with a slight decline in good governance (model 2). Despite this, in comparison to the effect of the receipt of Chinese finance, IFI finance has a smaller negative influence on good governance, supporting the initial prediction established by H2.

6. The Case of Mozambique

The final stage of analysis is centred on a close examination of a loan-agreement between China and Mozambique, which funded the eventual construction of the Maputo-Katembe

bridge in 2018. This specific loan was subsequent to Mozambique's disqualification from IMF debt-relief programmes after past loan-deals with China had seen debt-to-GDP levels spiral. Accordingly, the deal is used as an example of how governance norms are affected by the intricacies of Chinese financing. Following Halperin and Heath's approach to single-case analysis, qualitative insights were drawn from interviews, surveys (Afrobaromoter), journals and academic blogs.

6.1 Case selection

The case of Mozambique was selected as it presents an interesting nexus between elite relations, preferential finance and the procurement and development of large scale infrastructure projects. Added to this, following its strategic interests, namely the OBOR initiative, China has identified Mozambique as a hugely important economic hub. Consequently, China's economic and political influence in the country has grown substantially. In fact, according to 52 percent of the Mozambique population, China is the most influential external actor in the country, while 32 percent see China as the best model of development to follow (Afrobaromoter, 2016). Moreover, Chinese financial activity in Mozambique is significant; annual borrowing rates from China (displayed in table 4) have been consistently high, and the amount of Chinese contracts has steadily risen, peaking in 2016. Comparatively, IFIs have had decidedly less influence (6% according to Afrobaromoter), revealed by the fact that Mozambique has resided under IMF programmes only in 2008, 2009, 2015 and 2016 (see table 4). Undoubtedly, China's economic influence in Mozambique is unmatched by other international actors.

Table 4: Chinese finance in Mozambique

Year	IMF Loans	Loans $USD	Chinese Contracts $USD	Notable Projects*
2007	Yes	150	101	China builds new national stadium

2008	Yes	70	100	EXIM Non-concessional loans collateralized by commodities
2009	No	117	321	Loans to fund agricultural projects in Zambezi
2010	No	2	387	Maputo International Airport Upgrade
2011	No	175	228	Loans for Maputo-Catembe Bridge
2012	No	1056	295	Loans for Maputo ring-road
2013	No	470	786	EXIM Bank loan for Beira-Machipanda road
2014	No	432	814	Loans to fund countrywide telecoms deal
2015	Yes	215	1187	Unspecified
2016	Yes	156	1332	Non-concessional loans

Source: CARI & *AidData: Official Chinese Finance Dataset V1.1
Notes: *IMF programmes include ECF or SBA facilities only*

6.2 Governance in Mozambique

Classified by the POLITY index as an authoritarian regime, the Mozambique government has faced criticisms on a number of levels concerning the quality of governance it inspires. In particular, Mozambique has been said to have been "beset" by a perpetual state of endemic corruption, largely facilitated by a lack of transparency and accountability, but also by weak and ineffective safeguards against patronage networks at the state level (Freedom House, 2018). In the sphere of public-finance administration, the government has faced several accusations of mismanagement; notably in a publicly released audit in 2016 by Kroll (independent risk consultancy firm), for squandering almost $2 billion worth of public money. While this is an extreme example, patterns of poor governance have been fairly consistent over the past decade, and have certainly not reflected the good governance standards demanded by Bretton-Woods institutions. Perhaps more alarmingly, according to a recent IMF diagnostic report; over the past decade, cross-country WGI governance and corruption indicators have progressively deteriorated. This trend necessitates a closer look at the extent to which China has influenced, or affected such governance norms, or for that matter merely overlooked patterns of poor governance in pursuit of its particular financing interests.

6.3 Chinese Lending in Mozambique

A brief look at table 4 would indicate that Mozambique's lending history with China has mainly involved the distribution of loans to finance large-scale infrastructure projects. More specifically, loans have facilitated the construction of roads and bridges. Although, the expected corruption risks associated with infrastructure projects were discussed in section 3.3, further attention should also be given to the political costs foregone from receiving such finance. The first issue is that the high-level linkages formed have sustained a system in which the Mozambique government is not incentivised to pursue governance reform. As Mozambique has had continual access to non-concessional loans from China, it has had the opportunity to fill a critical financing-gap in respect to infrastructure spending. As the 2018 Afrobaromoter survey indicates, China's record of 'getting things done', has perhaps helped shape the positive attitude of the citizens of Mozambique towards China. This approach, undoubtedly extends up toward the government, prompting their eagerness to maintain a long-term financing relationship, through which China supplies loans conditional on access to infrastructure contracts. The implication of this is that the Mozambique government has come to rely upon Chinese finance (Wethal, 2017), and so does not need to seek policy-based finance. This has been identified as a key issue for concern by the IMF, claiming (in the 2019 diagnostic reports) that it has produced a circumstance in which there is "no central coordination mechanism for good governance reform efforts". The concerns of the IMF are not unfounded, and they attest to H2; that Chinese lending is likely to undermine good governance conditionality.

By the time Mozambique had arranged the Maputo-Catembe infrastructure loans, they had already cemented a strong creditor-debtor relationship with China (Baker, 2019). Crucially, the receipt of the loans marked the beginning of a period of poor governance particularly in regard to the management of public-finances (Coulibaly et al, 2019). Mismanagement stretched from unsustainable levels of debt-accumulation, to an absence of transparency. Therefore in 2016 when the IMF became aware of the undisclosed levels of debt that had been accumulated by the government, the fund promptly halted any further lending programmes (Financial Times, 2016).

6.4 Implications

The case illustrated here touches upon several of the operational mechanisms that are specified in section 3. These mechanisms proposed reasons why the Chinese approach to lending could

potentially undermine good governance. Certainly, the fact that Mozambique has established such a consistent relationship with China has meant that pursuing traditional sources of finance, namely the multilateral institutions was not necessary. This would suggest why Mozambique was able to deviate away from its good governance reform agenda for several years (2009-2016), the consequences of which resulted in its eventual disqualification, and further isolation from IFI finance. Concurrently, it is perhaps no consequence that governance indicators have steadily declined over the past decade.

7. Conclusions

The mixed-method analysis purported to provide greater insight into the impact of Chinese lending on state-level governance. Considering the countless factors that could influence governance quality across Africa, this paper's objectives were certainly ambitious. Furthermore, the ability extrapolate and produce robust conclusions was always going to be constrained by issues relating to the availability and quality of the data. Nevertheless, several important generalizations could be drawn.

The results of the regression models suggested that the receipt of Chinese finance is associated with a slight decline in good governance, but in contrast a greater amount of Chinese lending has no substantive impact. Perhaps more surprising is that IFI finance is also associated with a decline in good governance, which given the papers theorised expectations suggests that further quantitative study is required in order to draw robust and substantive conclusions.

Lastly, the short case-study attempted to contextualise how through supplying much needed infrastructure finance, over time, China has become an increasingly important source of political and economic influence in African states. In doing this the intention was also to underline the importance of 'conditionality' as a determinant in a state's decision to seek finance from IFIs, or instead, from China. Ultimately, these findings suggest that Chinese lending is not directly a problem per se, but increased attention should be placed upon the patterns of poor governance that have emerged in those states that China has chosen to finance.

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Appendices:

Appendix A: **Descriptive statistics** for variables included in study

Table A1:

Variable	Min	Max	Median	Mean	SD
Loans_Chinese	0.00	33000.19	51.43	729.00G	2848.334
Received_Chinese_Loans	0.00	1.000	1.000	0.6364	0.4817305
Loans_IMF	0.00	1.000	0.000	0.392	0.4889017
Chinese_contracts	0.00	7556.42	316.22	816.27	1252.244
Reg_quality	2.2437	0.6834	-0.5648	0.6875	0.6018053
Pol_stability	2.69919	1.10404	0.60908	-0.72905	0.8944446
Rule_of_law	1.8523	0.6960	-0.6699	-0.7500	0.5501755
Voice_Accountability	2.2261	0.7021	0.8729	-0.7380	0.721184
Control_of_corruption	1.8059	1.0391	-0.7252	-0.720	0.5575704
Govt_Effectiveness	-1.8483	0.6011	-0.7672	-0.7926	0.5344262
Natural_resource_rent	0.5233	59.6196	11.3280	14.5546	12.33163
Oil_rent	0.000	56.359	0.000	6.690	12.93834
Urban_pop	15.90	88.56	39.66	42.13	18.12536
Functioning_Gov	0.000	10.000	3.000	4.145	2.793293
Media_censorship	-2.81595	2.30507	0.31524	0.08569	1.154476
Internet_censorship	-2.92857	1.67489	-0.07976	-0.26981	1.210059
Freedom_House	3.00	88.00	35.50	40.93	22.36287
Jud_Indep	0.01656	0.90843	0.43262	0.43062	0.2545847
POLITY_SCORE	-88.0000	9.0000	1.0000	-0.9394	14.31398
Central_govt_debt	0.4884	173.5940	36.9661	43.5187	29.25533
Inflation_annual	-8.975	44.357	6.303	7.073	6.862289
Govt_Expenditure	2.047	74.270	13.731	14.101	7.625895

Appendix B: Operationalization of variables, measurement method and variable format

Table A2:

Variable	Format	Definition	Source
Dependent Variable			
(Models 1 & 2)			
Good_Governance	Range (-2.5 to 2.5)	Aggregate score of the 5 WGI indicators, measuring a state's adherence to good governance	World Governance indicators
Dependent Variables II			
(Model 3,4,5 & 6)			
Control_of_corruption	Range(-2.5 to 2.5)	Measures extent to which public power is exercised for private gain, including both petty and grand, forms of corruption.	WGI
Regulatory_quality	Range(-2.5 to 2.5)	Measures capability of government to implement policies and regulations that are efficient and effective.	WGI
Other WGI indicators			
Voice_&_Accountability	Range (-2.5 to 2.5)	Measures extent to which country's citizens are able to participate in selecting, and scrutinising their government.	WGI
Rule Law	Range (-2.5 to 2.5)	Measures respect for rule of law at state-level	WGI
.			
Govt_Effectiveness	Range (-2.5 to 2.5)	Measures quality of policy implementation process	WGI
Political Stability	Range (-2.5 to 2.5)	Measures perceptions of the likelihood of political instability.	WGI
Independent Variables I			
(Models 1,2,3 & 4)			
Loans_Chinese	Continuous ($USmn)	Total annual loans from China by each country. Cross-checked with reports from AidData.	CARI & AidData
Received_Chinese_Loans	Binary	Whether or not a country received loans from China in that a given year. 1 for 'yes' and 0 for 'no'.	CARI
Chinese_contracts	Continuous ($USmn)	Gross annual revenues of Chinese construction companies in Africa.	CARI
Independent Variables II			
Loans_IMF	Binary	Whether or not a country was enrolled into an IMF ECF or SBA programme. 1 for 'yes' and 0 for 'no'.	IMF annual reports and website
Loans_WB	Continuous	Annual amount received in USD of World Bank credit.	World Bank indicator
Control Variables			
Urban_pop	Percentage	Population that live in urban areas as a % the total population.	World Bank
Oil_rent	Percentage	Sum of oil rent as a % of GDP.	WB
Natural_resource	Percentage	Sum of natural resources exports as a % of GDP	WB

Political Factors			
Functioning_gov	Measurement (0-12)	Is the freely elected head of government and a national legislative representative determine policies of the government? Is gov't accountable to electorate?	QoG
Media_censorship	Measurement (1-4)	Public perception of whether government takes action to censor media and press.	V-Dem
Internet_censorship	Measurement (1-4)	Public perception of whether government takes action to censor information on the internet.	V-Dem
Jud_independence	Measurement (0-1)	Captures the extent to which the judiciary is allowed to act independently.	V-Dem
Freedom_House	Measurement (0-100)	Aggregated score of political freedom	Freedom House
POLITY_SCORE	Indicator -10-10	Measures political regime authority on a 21-pont scale ranging from -10 to +10.	POLITY IV
Economic Factors			
Central_govt_debt	Percentage	Total stock of debt liability issued by the central Gov't as a % of GDP	IMF Database
GDP	Continuous	Total of goods and services in economy (output)	WB
Govt_Expenditure	Percentage	Government spending as a % of total GDP	WB
Net_ODA	Continuous	Net official development assistance received	WB
Inflation_annual	Percentage	Annual percentage level of consumer prices	IMF Database

Notes:

1. QoG denotes quality of governance index
2. POLITY_SCORE was omitted from models

Appendix C: African states included in the panel data

Table A3: Countries included in the study

Angola, Benin, Botswana, Burkina-Faso, Cameroon, Central African Republic, Chad, Cote D'ivoire, Democratic Republic of Congo, Djibouti, Egypt, Eritrea, Equatorial-Guinea, Ethiopia, Gabon, Gambia, Ghana, Kenya, Madagascar, Mali, Mozambique, Nigeria, Niger, Uganda, Republic of Congo, Rwanda, Senegal, Sudan, South-Africa, Tanzania, Zambia, Zimbabwe

Appendix D: PLM Fixed Effects Regression Models

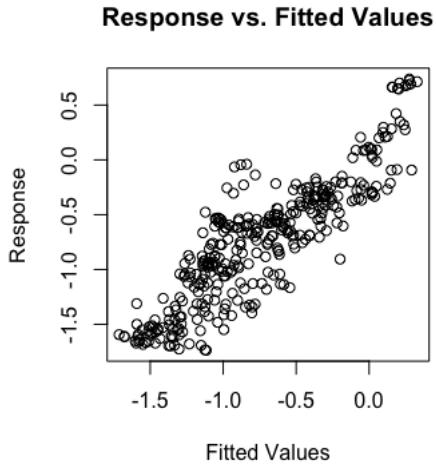
Table A4: Panel Data Regressions

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Received_Chinese_loans	0.00		-0.00			
	(0.01)		(0.02)			
Loans2	-0.00					
	(0.00)					
LogGDP	-0.00					
	(0.02)					
LogODA	-0.04**	-0.04**				
	(0.01)	(0.01)				
LogGovExp	0.02	0.03	-0.04	-0.03	-0.03	0.01
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Inflation_annual	-0.00	-0.00				
	(0.00)	(0.00)				
Central_govt_debt	-0.00***	-0.00***	-0.00	-0.00	-0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Functioning_Gov	0.06***	0.06***	0.00	0.00	0.00	0.03*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Jud_indep	0.03	-0.02	-0.06	-0.10	-0.07	0.01
	(0.05)	(0.05)	(0.08)	(0.08)	(0.08)	(0.07)
Natural_resource	-0.01***	-0.01***	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Urban_pop	-0.01**	-0.01	-0.02**	-0.02**	-0.02**	0.00
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
Internet_censorship	0.02	0.02	-0.02	-0.02	-0.02	0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
IMF_loans		-0.03*		-0.05*		
		(0.01)		(0.02)		
lag(LogWB)		-0.03**		-0.00	-0.01	0.01
		(0.01)		(0.01)	(0.01)	(0.01)
lag(LogGDP)		-0.00	-0.03	-0.04	-0.04	-0.03
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
lag(Loans2)			0.00			
			(0.00)			
Voice			0.48***	0.47***	0.44***	0.05
			(0.08)	(0.08)	(0.08)	(0.07)
Freedom_House			-0.00	-0.00	-0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)
Chinese_contracts					0.00	
					(0.00)	
Contracts3						-0.00
						(0.00)
R^2	0.40	0.42	0.25	0.26	0.25	0.16
Adj. R^2	0.31	0.34	0.14	0.15	0.15	0.04
Num. obs.	352	352	352	352	352	352

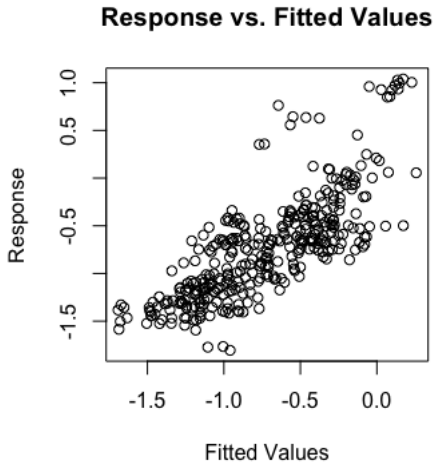
***p < 0.001, **p < 0.01, *p < 0.05

1. Models were estimated with Unit Fixed Effects
2. Modes were corrected with heteroskedastic standard errors
3. Variables that were lagged and logged are specified

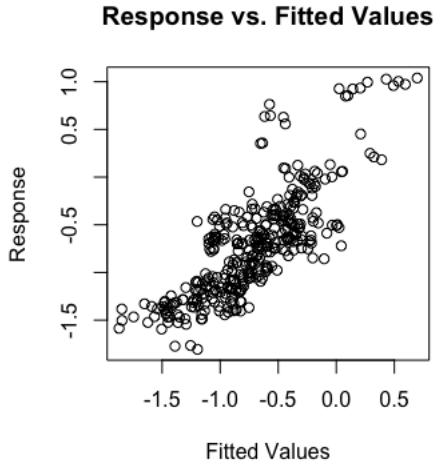
Appendix E: Plots of response vs fitted values show estimated GAM model fit:


Response vs. Fitted Values
Response
Fitted Values
-1.5
-1.0
-0.5
0.0
0.5

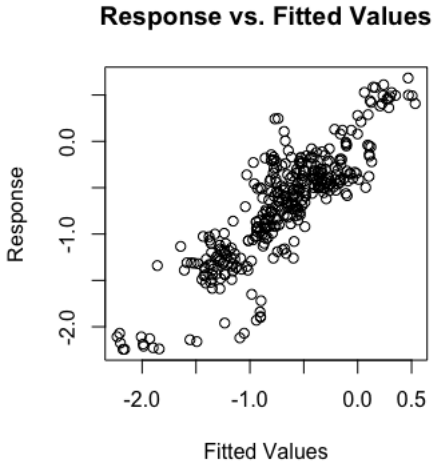
M1


Response vs. Fitted Values
Response
Fitted Values
-1.5
-0.5
0.5
1.0
-1.5
-1.0
-0.5
0.0

M3


Response vs. Fitted Values
Response
Fitted Values
-1.5
-0.5
0.5
1.0
-1.5
-1.0
-0.5
0.0
0.5

M4


Response vs. Fitted Values
Response
Fitted Values
-2.0
-1.0
0.0
-2.0
-1.0
0.0
0.5

M5