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# Chinese official lending, infrastructure development and bilateral political alignment: The case of Africa

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## CITATION

Durif C, Monnier JB, Di Meglio JF. (2024). Chinese official lending, infrastructure development and bilateral political alignment: The case of Africa. *Journal of Infrastructure, Policy and Development*. 8(16): 9669.  
<https://doi.org/10.24294/jipd9669>

## ARTICLE INFO

Received: 17 October 2024  
Accepted: 1 December 2024  
Available online: 31 December 2024

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**Abstract:** This study investigates the link between debt and political alignment in international relations between the People’s Republic of China (PRC) and African nations. Using recorded roll-call votes on United Nations General Assembly (UNGA) resolutions, we explore whether PRC investment in sovereign debt influences the voting behaviour of loan recipient countries. We compile voting data for African countries from 2000 to 2020 to calculate an annual voting affinity score as a proxy for political alignment. Concurrently, data on Chinese public and publicly guaranteed (PPG) loans to African governments are collected. A Two-Stage Least-Squares analysis is employed, using the ratio of Chinese PPG debt to GDP as an instrument to address endogeneity. Results reveal a negative impact of Chinese lending on African political support, while trade, foreign direct investment (FDI), and Chinese GDP positively influence political alignment. In high debt-risk African countries, interest rates have a negative impact, whereas loan maturity shows a positive effect. These findings suggest that Chinese loans, particularly under commercial terms, may have strained bilateral relations due to debt sustainability concerns. Nevertheless, the positive impacts of trade and FDI may enhance international relations, highlighting the limitations of China’s loan diplomacy in fostering long-term strategic alignment in Africa.

**Keywords:** China; Africa; sovereign debt; debt-trap diplomacy; United Nations General Assembly; voting alignment; foreign direct investment; Two-Stage Least-Squares

## 1. Introduction

### 1.1. Economic or political interest

Since the early 2000s, the People’s Republic of China (PRC) has pursued a leading role on the international stage through economic and financial expansion abroad. While the “Going Global Strategy”<sup>1</sup> was principally intended to serve domestic growth, the appointment of President Xi Jinping and the launch of the Belt and Road Initiative (BRI) in 2013 marked the rise of a more internationally assertive China with regard to its global political ambitions.

Targeting the enhancement of infrastructure networks and trade among other emerging economies, the BRI was supported by massive financial outflows. China has used Foreign Direct Investment (FDI), development aid and sovereign lending extensively to finance partner countries. The PRC used these financial tools primarily to secure natural resource supplies, to create new outlets for overcapacities, and to develop recipient markets for Chinese goods. However, these instruments were also intended to help Beijing gain political leverage (Chen, 2018; Dreher et al., 2018).

It is naive to consider that Chinese financial outflows are solely motivated by economic or strategic interests (Raess et al., 2017). China’s financing, whether in the

form of official development assistance<sup>2</sup> (ODA) or commercial loans, is used as a channel of influence in recipient countries to build partnerships, impose Chinese norms and standards, and promote conformity in international relations (Stein and Uddhammar, 2021; Strüver, 2016). In this regard, the PRC's economic and foreign policy agendas are deeply intertwined as its economic and financial arsenal is employed to create a Chinese-led alternative international order (Lindsey, 2022; Murphy, 2022).

## **1.2. Tilting the global governance system**

When considered as a hard power component of its political expansion, China's BRI reflects a shift from a passive to a proactive stance in the global governance arena. PRC participation in existing multilateral organisations has also created new Chinese-led initiatives and institutions covering all political, economic, and military spheres (Ekman, 2022; Nantulya, 2023). The Beijing-headquartered Asian Infrastructure Investment Bank (AIIB) has provided developing countries with a new funding option, directly competing with the traditional multilateral creditors, such as the World Bank (WB) or the International Monetary Fund (IMF). The Shanghai Cooperation Organization (SCO), focusing mainly on international security cooperation, emerged as a new player alongside NATO. Political platforms such as the recent China-Central Asia Summit, or Forums on China-Africa Cooperation (FOCAC), were initiated by the PRC to bolster its interregional partnerships in the Global South<sup>3</sup>. China's renewed engagement with the existing multilateral institutions, such as the United Nations, also illustrates how China has exercised increasing global influence. This includes more regular exercise of its veto at the UN Security Council (UNSC), greater budgetary contributions for general and peacekeeping efforts, as well as staffing of executive-level personnel positions in UN Specialized Agencies (Fung and Lam, 2021, 2022; Schaefer and Viña, 2023).

## **1.3. Multilateral voting**

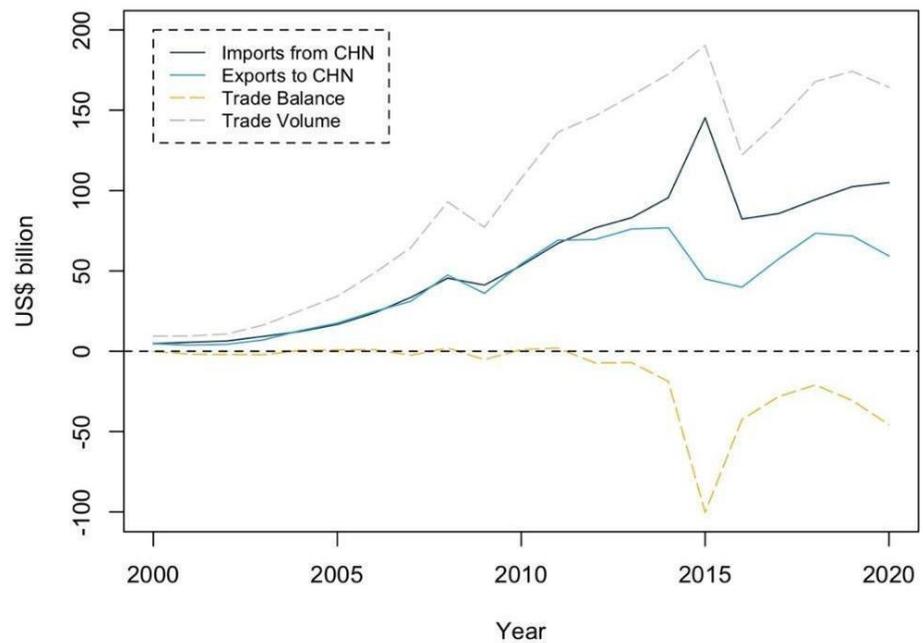
Beijing's significant efforts to develop partnerships through both economic and political channels are evident in changing multilateral voting patterns. A compelling example is the latest UNGA resolution vote relating to the withdrawal of Russian forces from Ukraine which revealed that, of the 52 countries that abstained, were absent, or voted against the measure, 45 belonged to the Global South, and 44 were participating in the BRI (Amighini and García-Herrero, 2023). Further, more than half (24) were African countries<sup>4</sup> (see Section I in Appendix A). The subsequent question raised by most of the media and specialised observers about these figures is whether or not these countries, especially the African ones, are increasingly aligning themselves with the PRC (Adeoye, 2022; Eguegu, 2022; Van Staden, 2023).

There is growing evidence that African countries generally vote similarly to China but differently from other major powers, such as the United States (US), the United Kingdom (UK) or France (see Section II in Appendix A) (Fung and Lam, 2022). Furthermore, African countries have been historically decisive for China in important UNGA votes, including the 1971 vote recognizing the PRC as part of the UN and hence rejecting the Republic of China (ROC) (El-Khawas, 1972; Nantulya,

2023). Clearly, it is possible that Chinese economic and financial influence in Africa may be causing a strong voting realignment.

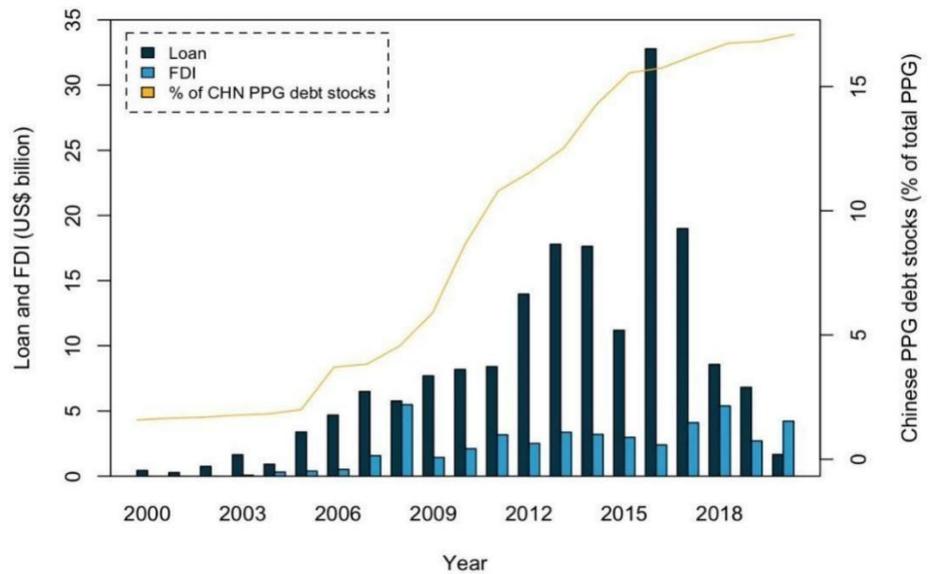
#### 1.4. What is excessive lending

While China’s bilateral trade, loans, and FDI flows in Africa were almost non-existent in 2000, China became Africa’s largest commercial partner, bilateral creditor, and investor just twenty years later. **Figure 1** illustrates how Sino-African trade volume was relatively stable in the early 2000s but grew almost twenty-fold to reach a peak of US\$ 200 billion in 2015. After that year, Africa’s trade balance was hit by both a surge in imports and a decline in exports caused by a double shock to commodity prices (2014–2016) and foreign exchange (Shanghai Stock Market Crash of 2015). After 2016, trade volumes again increased, but Africa’s trade deficit persisted. Indeed, the most salient feature of China’s increasing engagement with Africa lies in the sovereign debt field.



**Figure 1.** Africa’s bilateral trade with China: imports, exports, trade balance and trade volume (2000–2020).

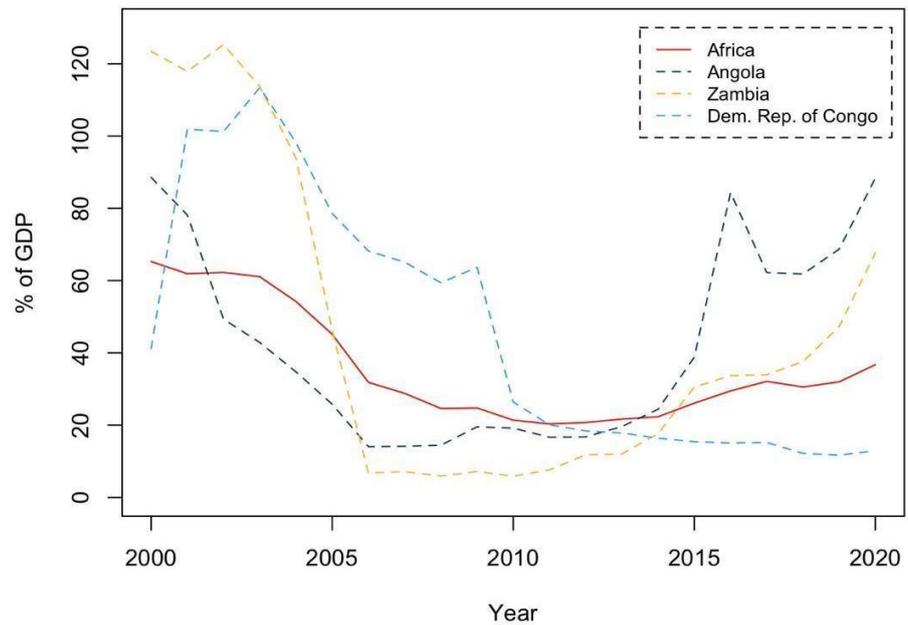
**Figure 2** reveals that nearly US\$ 180 billion worth of official loans were contracted by African countries between 2000 and 2020, where China represented 50% of African bilateral PPG stocks in 2019. This was 16% of the total, even though loan flows started to decline in 2018. As a comparison, FDI flows stayed relatively low in the same period, at US\$ 40 billion.



**Figure 2.** China’s loan amounts, FDI flows and PPG debt stocks in Africa (2000–2020).

In light of these developments, the PRC has often been accused of luring African economies into an overdependence upon its financing to bolster its economically dominant and politically influential position (Kinyondo, 2019; Wheatley et al., 2020). **Figure 3** illustrates that even before the global COVID-19 shock, debt-to-GDP ratios were creating serious risks for certain African countries<sup>5</sup> (Calderón and Zeufack, 2020; IMF, 2020).

Globally, mainstream suspicions have grown that Beijing had deliberately extended unsustainable loans with higher interest rates, shorter maturities, opaque contracts, questionable asset collaterals, and specific restructuring conditions. The so-called “debt-trap diplomacy” narrative arose to describe those Chinese lending practices aimed solely at emerging economies (Chellaney, 2017). Moreover, worries grew that the actual debt owed to the PRC might be underreported in the country’s official statistics, where this “hidden” debt could be 50% of the real total, considerably altering the African debt risk profile (Horn et al., 2021). If Beijing was exercising its ideological influence on Africa during the second half of the 20th century, the start of the 21st century appears to reveal its extensive economic and financial fallout. Whether or not the result is beneficial to Sino-African political relations remains an open question worth investigating.



**Figure 3.** Africa’s average external PPG debt-to-GDP ratio compared with Angola, Zambia and the Democratic Republic of Congo (2000–2020).

### 1.5. Methodology

This analysis seeks to answer many relevant questions. Has the PRC’s increasing financial influence in African countries affected their bilateral political support? Is this impact positive or negative, and can this change be quantified? How does the influence of loans compare to the effect of FDI? What are the other main variables correlating to African political alignment with the PRC? Could the “debt-trap diplomacy” narrative be supported by evidence of harm to these bilateral relations? The following analysis aims to provide insight into voting affinity and does not directly assess the degree that China has attained a Chinese-led world order.

Our empirical approach uses two country-level panel datasets spanning the period 2000 to 2020. The first consists of all UNGA roll-call votes, and the second consists of all Chinese PPG loans contracted by African governments and government entities. The UNGA data is used to construct our main outcome variable in the form of a dyadic voting affinity score, which we use as a proxy to measure Africa’s political alignment with China. After data harmonisation, we add economic and political control variables (trade, FDI, Chinese GDP growth, type of political regime, FOCAC, and state visits). We then implement a fixed-effects, Two-Stage Least-Squares (TSLS) model to estimate the impact of PRC loans (independent variable) on voting affinity (dependent variable).

This main regressor may present a potential reverse causality bias, as existing political alignment can also affect lending decisions. So, we take the Chinese PPG debt-to-GDP ratio<sup>6</sup> as an instrumental variable (IV), thus moving from a flow variable to a stock variable, thereby mitigating the contemporaneous feature of flow variables and adding a risk dimension relating to the size of the Chinese financial footprint in African economies to our analysis. We argue that our Chinese debt-to-GDP ratio instrument is exogenous, as it can only affect political alignment via the loan channel.

Finally, we use a preferred country fixed-effects panel specification to derive additional results on targeted subsamples to develop an international relations narrative for explaining the relation between sovereign debt and political affinity.

## **1.6. Assumptions**

Loans can be economically beneficial between both lender and borrower while also promoting bilateral political relations. Thus, loans can aid African countries' development while creating added political leverage for the PRC. Our main hypothesis is that these benefits remain mutual as long as they do not exacerbate debt sustainability. We assume that increasing debt-to-GDP ratios have detrimental effects on voting affinity, given that they would reflect a higher risk of economic distress through cooperating with the PRC. We also hypothesise that higher interest rates and shorter maturities (common concerns among commercial loans) tend to increase debt servicing costs and negatively affect political alignment. We subsequently consider that countries generally prefer ODA loans with more concessional terms. Ultimately, deteriorating African trade balances, a sign of relatively weaker exports to China, should have a negative impact on bilateral relations, while higher FDI, seen as a more productive and long-term form of Chinese investment, should enhance them. Higher Chinese domestic GDP growth should also have a positive effect on bilateral alignment since it indicates better Chinese capacities to project itself overseas.

Drawing on African countries' theoretical preferences in terms of economic development, sovereign debt, and creditor-debtor interactions, these assumptions aim to create an explanatory framework for the linkages between economic factors and international relations. We argue that China's economic and financial intervention should influence African countries' sentiment towards it, both at a governmental and societal level, which could in turn positively or negatively affect bilateral foreign policy alignment. The "debt-trap diplomacy" narrative could constitute such a sentiment-related consequence of China's lending strategy that this study wishes to explore.

The rest of the paper is organised as follows. Section 2 discusses the existing literature and our contribution to it. Sections 3 and 4 provide more details about the sources and the analysis of the data we are exploiting. Section 5 presents our empirical strategy and the different statistical models we use. Section 6 tackles our findings. Finally, Section 7 provides an interpretation of our results and concluding remarks.

## **2. Literature**

### **2.1. Aid, loans and political alignment**

This article first relates to a growing literature addressing the impact of development finance on bilateral policy preferences. While Chinese focused studies remain quite scarce, the existing literature addressing the general connection between debt and political alignment is more abundant. Raess et al. (2017) examined the impact of Chinese commercially oriented financial flows (COFFs) on the voting alignment of recipient countries at the UNGA, assuming that COFFs have political ramifications. They found that what they call non-development aid, namely commercial loans,

positively affects bilateral relations by reducing the distance between China's and recipient countries' voting ideal points. Inversely, COFFs increase the policy preferences' distance from the US. Using logistic regressions, Strüver (2016) measured the effects of economic, diplomatic, and military factors on voting similarity, showing that political regime proximity, converging foreign policy stances, and foreign aid all positively influence bilateral relations. Dreher et al. (2018) focused more on the determinants of Chinese ODA (concessional) and commercial loan allocation. Analysing them separately, the authors argued that both these forms of development financing are driven by different types of incentives. Chinese ODA is motivated by political agendas, such as UNGA voting and the recognition of the One China principle, whereas other official financing target economic interests in resource-rich countries and trading partners.

From a more general perspective, Dreher and Sturm (2012) found that countries benefiting from IMF and WB programs tend to vote more in line with the prevailing stance of the G7. Both the papers of Carter and Stone (2010) and Wang (1999) proved that US aid disbursements expand its political influence. Strand and Tuman (2012) argued that Japanese ODA to microstates increases voting alignment at the International Whaling Commission.

## **2.2. Trade, FDI and global influence**

Our paper also contributes to the literature relating to the impact of trade and FDI on bilateral relations. Although there is a general consensus on the positive spillovers of trade on political and voting alignment (Di Caprio and Sokolava, 2018; Sokolava, 2019; Yao et al., 2021), the relationship between FDI and international relations presents more mixed results (Neuberger, 2016; Polachek et al., 2007; Song et al., 2020).

Among Chinese-specific studies, Flores-Macias and Kreps (2013) and Whitten et al. (2020) showed that the more states trade with the PRC the more likely they are to converge on foreign policy matters and thus to have warmer bilateral relations. Using IV models, Yan and Zhou (2021) found that Beijing tends to reward with trade the countries that align their voting at the UNGA but that this effect lasts only in the short run. Che et al. (2021) also showed that growth in natural resource exports to China increases the probability of voting in line with it at the United Nations.

## **2.3. Determinants, terms and impact of Chinese loans to Africa**

This empirical analysis was made possible through the novel literature and data documenting Chinese lending to Africa. Firstly, it draws both on the pioneering data collection work made by Deborah Brautigam and her team as part of the China Africa Research Initiative (CARI) of the Johns Hopkins School of Advanced International Studies (SAIS)<sup>7</sup>, and on the more recent groundbreaking papers from Gelpert et al. (2021), Horn et al. (2021) and Mihalyi and Trebesch (2023). These studies investigated China's practices, terms and allocation of loans to developing countries and compared them with those of traditional lenders.

Moreover, our article can also come as a complement or extension to the literature analysing the impact of loans on debt risks in African countries (Acker et al., 2021;

Brautigam et al., 2020; Calderón and Zeufack, 2020). We argue that the bilateral relations focus of our study may be the resulting impact of changing debt situations. Indeed, if the PRC loans affect the risk profile of a particular country, the latter might be less inclined to further positive relations. In a similar perspective, this paper contributes to the “debt-trap diplomacy” literature. While there is an emerging consensus stating that there is not enough evidence to qualify Chinese lending practices as a “debt-trap” (Brautigam and Kidane, 2020; Lemmy and Maluki, 2019; Singh, 2020), their very particular features in terms of size and conditions might still affect political alignment.

#### **2.4. China and the Global South**

Finally, this study touches more broadly on how China interacts with Global South countries and how it operates to expand its influence compared to other major global powers. In her recent book, Murphy (2022) draws an exhaustive profile of China’s engagement with Global South nations. Looking at the last thirty years, she analyses all diplomatic, economic, and military dimensions of Beijing’s actions in Africa and in the Middle East, and how it uses them to forge alliances. Rejecting the concept of “alliances” when it comes to the PRC, Ekman (2022) highlights a “coalition-building” tactic. She (Ibid) refers to China’s goal of enlarging its “circle of friends”, and identifies trade relations, the BRI, and UN voting as main battlegrounds. More specifically, Ding (2018) and Khatri and Sharma (2019) concentrate on the PRC’s soft power influence along the BRI. Lindsey (2022) and Sutter (2020) study how China is competing with the US and its allies in developing countries to assert its position as the new dominant player in global norms and governance.

With China’s rise on the world stage posing a major threat to the Western-led liberal international order and Western influence generally declining in the Global South due to a lack of policy coherence and unity (Campbell and Ratner, 2018; Hogan and Patrick, 2024; Mirel, 2022; Sicurelli, 2011), powers such as the US and the European Union (EU) have been forced to reshape their strategies. The US’s Build Back Better World and the EU’s Global Gateway infrastructure and connectivity initiatives are for instance seen as direct responses to the BRI (Abbas and Siddiq, 2022; Hanelt and Rock, 2023). Based on the usual Western normative stance in terms of democratic values and human rights, these initiatives focus on investment in the digital, health and climate change sectors, while also emphasising the need for high environmental, labour and transparency standards (Chaziza, 2021; European Commission, 2021). The US and the EU therefore present divergent approaches to the PRC’s positions of political non-interference and non-conditionality (Hasmath, 2014; Pairault, 2021), as well as its alleged poor standards and opacity when it comes to development projects (Gelpern et al., 2021; Le Goff, 2017).

#### **2.5. The way forward**

Our intended contribution is threefold. First, we aim at filling a gap in the existing literature by adopting an international relations, rather than an economic, point of view to avoid the debate over the relative economic effectiveness of China’s development policies (Abate, 2022; Mandon and Woldemichael, 2022; Mehmood and Seror, 2019;

Mlambo, 2022; Xu et al., 2020). Rather, we pay attention to its political consequences, which are relatively less discussed in the academic sphere. Second, we wish to complement and enhance the literature on Chinese official lending by considering the full range of lending types. Most of the work carried out on this matter concentrates on ODA flows and often neglects the commercial part of China's financing, which accounts in fact for the most part. To the best of our knowledge, only Raess et al. (2017) include Chinese commercial loans in their analysis of UNGA voting alignment. Last, our contribution is also methodological. We employ a rigorous approach, collecting and cross-referencing data from a variety of sources, to correct for the plausible endogeneity bias lying in loans and aid variables. Indeed, a significant proportion of the literature ignores the potential reverse causality bias that our TSLS model considers.

### **3. Data**

This study covers 47 African countries over the period 2000–2020. We exclude some countries from our scope of study due to the absence of data<sup>8</sup>. Similarly, our period of interest begins in 2000, as data on Chinese lending in Africa prior to that year is unavailable.

We use 1630 resolution votes to construct our dependent variable: a voting affinity score, based on voting dyadic interactions between each African country and the PRC (see **Table B1** in Appendix B). Our primary independent variable is the aggregate of all Chinese loans per African country per year. In addition, we compute the average interest rate and the average of the combination of both maturities and grace periods<sup>9</sup> per country per year. Since we suspect an endogeneity bias, we construct our instrument through our debt-to-GDP ratio variables using both total and Chinese PPG external debt outstanding, by country and by year. Creating this variable introduces a debt risk, or debt sustainability, dimension to our data. Finally, we use a set of economic and political control variables to account for omitted variable bias. Section III in Appendix A provides more detail into the construction and data sources of each variable used in the empirical analysis. **Table B2** in Appendix B presents summary statistics.

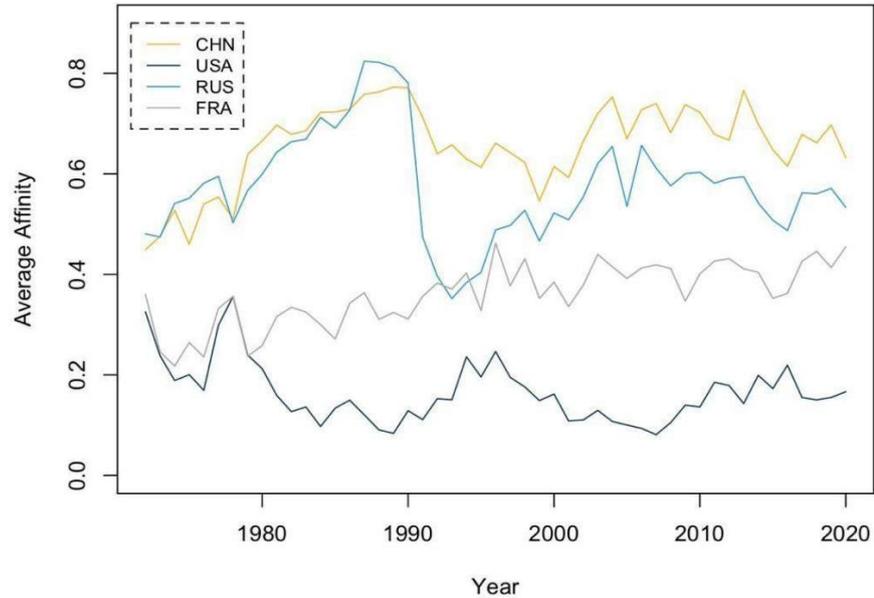
### **4. Descriptive statistics and data narrative**

The intuition behind the analysis can be illustrated through graphical insights into the data. We first analyse the degree of Sino-African voting affinity, our main outcome variable addressed in the key hypotheses from Section 1. This section provides a potential narrative explaining the effects of Chinese loans, terms, and other variables on bilateral foreign policy alignment.

#### **4.1. Historical voting affinity patterns**

**Figure 4** illustrates the historical trends in African countries' voting affinity with China and other global powers. It reflects our aggregate continental score for the PRC, the US, France, and Russia from 1971 (the year Communist China was recognized at the UN) to 2020. Like Fund and Lam (2022), we find that African countries have a greater voting alignment with China (or Russia) than with any Western countries. The

average affinity over the whole period is 0.66 for the PRC, while it is only 0.17 for the US and 0.36 for France. Indeed, Sino-African alignment increased from 0.45 in 1971 to 0.77 in 1989, the year marking the onset of the Soviet Union collapse.

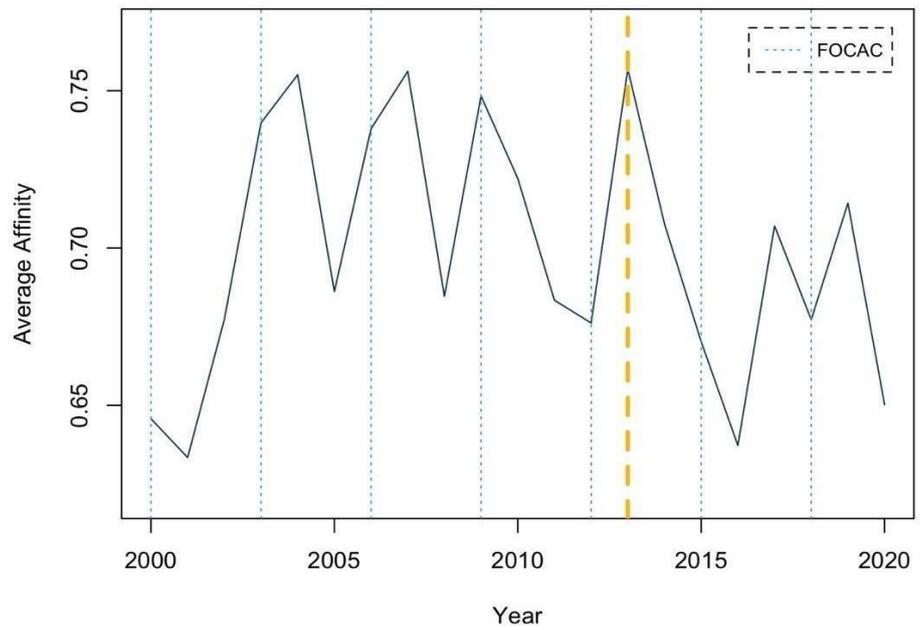


**Figure 4.** Africa’s average voting affinity with China, Russia, France and the US (1971–2020).

El-Khawas (1972) posits that this voting affinity growth is the result of both Beijing’s political support of African countries during the decolonization waves and a desire for multilateral recognition that began in the 1960s. Yu (1988) claims that a decline in Africa’s political affinity with China during the 1990s marked the end of the USSR and China’s refocusing on its internal economic development. Then the PRC’s emergence as a global economic player in the early 2000s gave it a new lease on life. As mentioned earlier, Sino-African relations were mainly based on ideology until the end of the 20th century, when they became much more economic.

#### **4.2. Variation in affinity over time and issues**

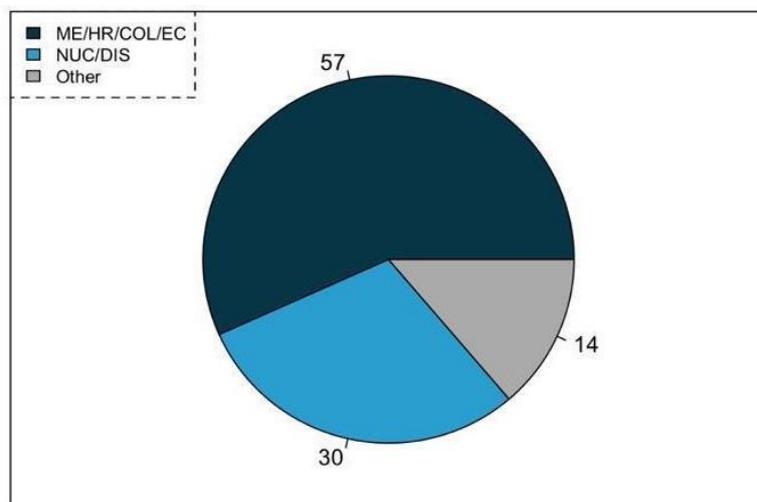
Over the last two decades or so, we can observe two sub-periods in Sino-African alignment (see **Figure 5**). From 2000 to 2013, the affinity score increased overall from 0.65 to a maximum of 0.76. After a strong upward trend from 2000 to 2003, we can identify an oscillating stagnation from 2000 to 2013. Afterward, affinity declined, plunging to 0.63 in 2016 and ending at 0.65 in 2020. Nonetheless, the most striking characteristic of the China-Africa voting affinity curve is its seasonality. If we disregard general trends, **Figure 5** clearly shows fluctuations that can be characterised as seasonal and reflect the agendas of UNGA sessions voting on resolutions at regular time intervals.



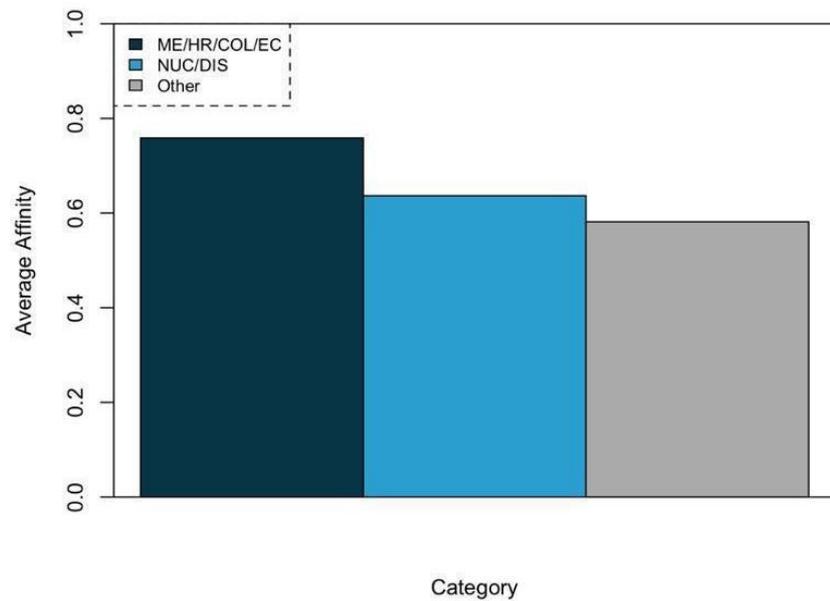
**Figure 5.** Africa’s average voting affinity score with China (2000–2020).

We then establish structural patterns in the China-Africa voting behaviours while taking such seasonality into account.

Additionally, when separating the affinity score by vote category, we can identify that China and African nations strongly converge on ME, HR, CO, and EC resolutions (see Section III in Appendix A to find details on vote categories), producing a score of 0.76 (see **Figures 6** and **7**). Pooled together, they account for almost 60% of the total votes, which explains the overall high level of alignment. Yet China and Africa diverge much more on resolutions related to NUC and DIS categories where the average affinity for these voting categories is 0.64. This may arise because the PRC is both a nuclear power and an arms producer while African countries are not. We therefore argue that a change in the structure of the votes will trigger a change in the affinity score.



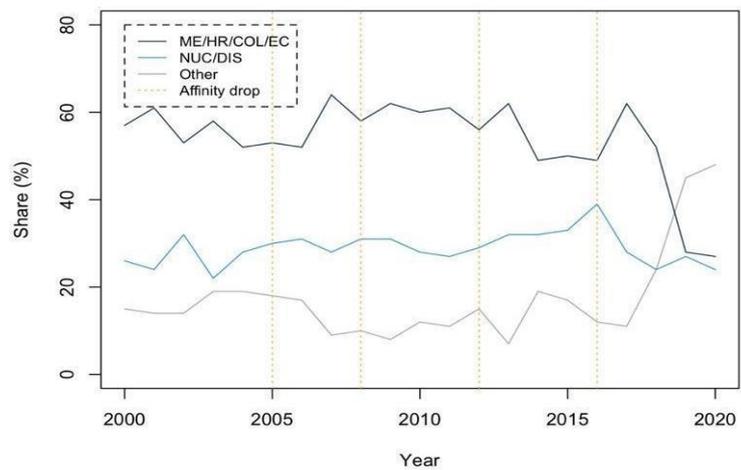
**Figure 6.** Share of votes (% of total) by pooled UN resolution category over our period of interest (2000–2020).



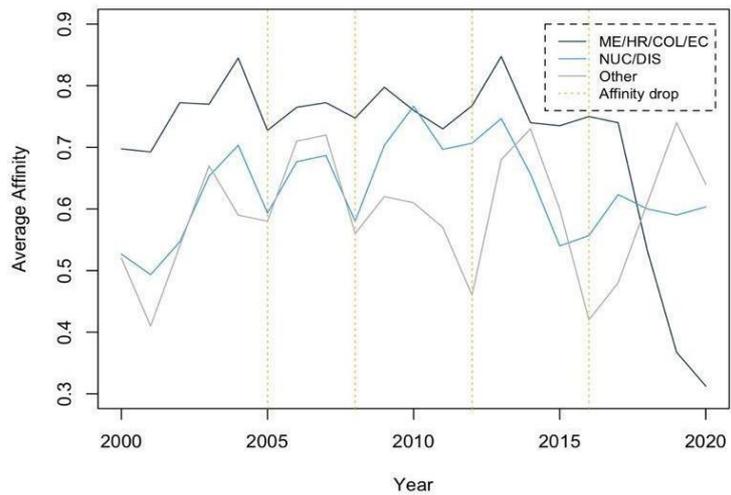
**Figure 7.** Average voting affinity by pooled UN resolution category over our period of interest (2000–2020).

From year to year, new resolutions can arise in UNGA agendas that likely come from international geopolitical events, where their divisive features can negatively affect foreign policy alignment. Examples include the Syrian Civil War in 2011–2012, the Crimea invasion in 2014, or the Iran Nuclear Deal complications in 2015–2016. Each had an impact on multilateral discussions, and these resolutions often fall into the category “Other” which has the lowest average affinity score of 0.58.

**Figures 8 and 9** illustrate the extensive and intensive margins of vote categories, showing respectively the share of votes (structural factor) and the average affinity (occasional factor) by pooled categories over time. It appears that the drops in average affinity of 2005, 2008, and 2012 are driven by sharp declines in NUC/DIS and Other categories. The largest drop, across 2014–2016, is due to a decrease in the share of votes relating to ME/HR/COL/EC, while the shares of Other (2014) and NUC/DIS (2016) increase<sup>10</sup>.



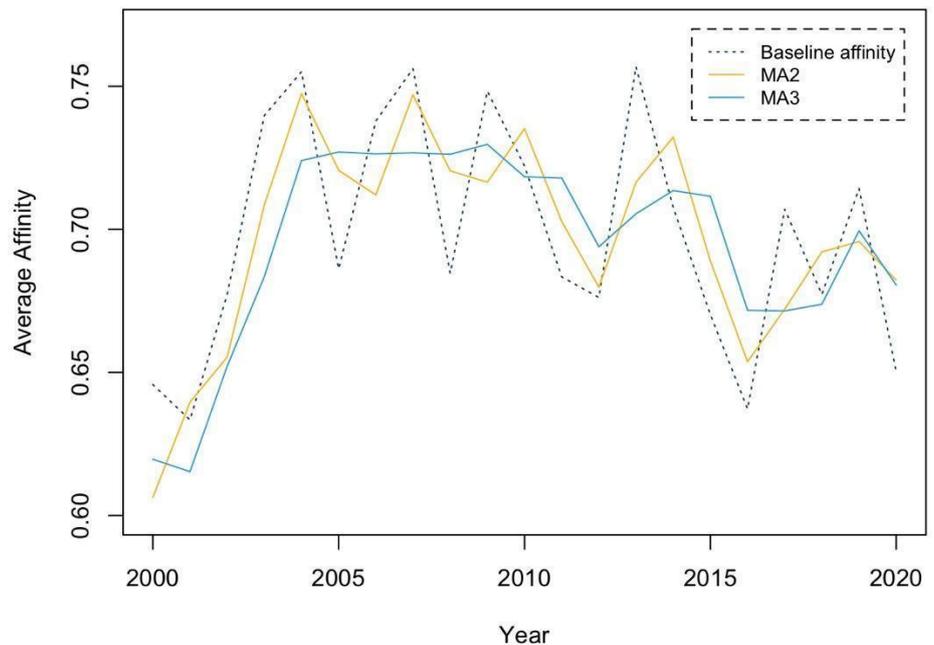
**Figure 8.** Share of votes (% of total) by pooled UN resolution category by year (2000–2020).



**Figure 9.** Average voting affinity by pooled UN resolution category by year (2000–2020).

### 4.3. Properly measuring affinity trends over time

To account for the seasonality of Sino-African affinity, we estimate moving average (MA) versions of our baseline curve (see **Figure 10**) in two ways. For any African country in a year  $t$ , the first MA takes only the previous affinity value ( $t-1$ ) (in addition to the  $t$  value) to compute the average (MA2). However, the second MA takes the previous year, as well as the following value (MA3). This method allows us to smooth out seasonal variations in our data and essentially capture the main trends. As a result, the MA2 continental aggregate still exhibits some seasonality, but with a smaller standard deviation. The MA3 shows an even more flattened trend representing the major movements of China-Africa bilateral political alignment.



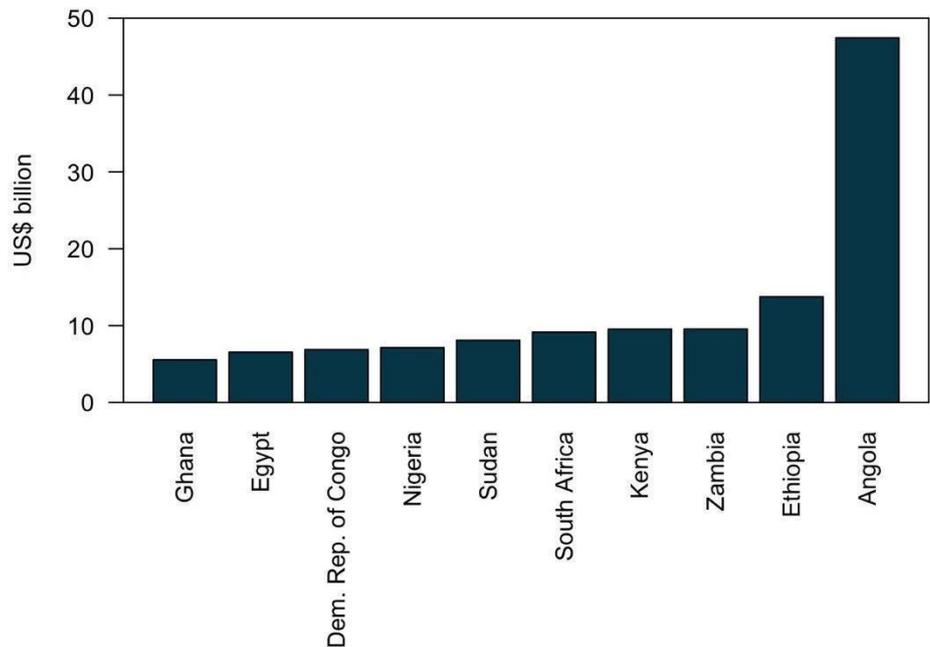
**Figure 10.** Transformation of our baseline voting affinity curve into moving average versions (MA2 and MA3).

This smoothing allows us to more accurately identify the different phases of its evolution. We observe a rapid increase between 2000 and 2004, followed by a stagnation period until 2009. The level of affinity then starts to decrease, first between 2009 and 2012, then again more significantly between 2014 and 2016. Note that MA3 will be our preferred outcome variable throughout the econometric analysis.

#### 4.4. Loans and voting affinity

We now delve into the exogenous factors that may be behind the variations of our dependent variable. Using these main assumptions allows us to investigate whether Chinese loans, by both their size and their terms, negatively affected the degree of bilateral alignment. We also investigate whether more qualitative assessments relating to a potential Chinese “debt-trap diplomacy” may also have detrimental effects on Sino-African political affinity.

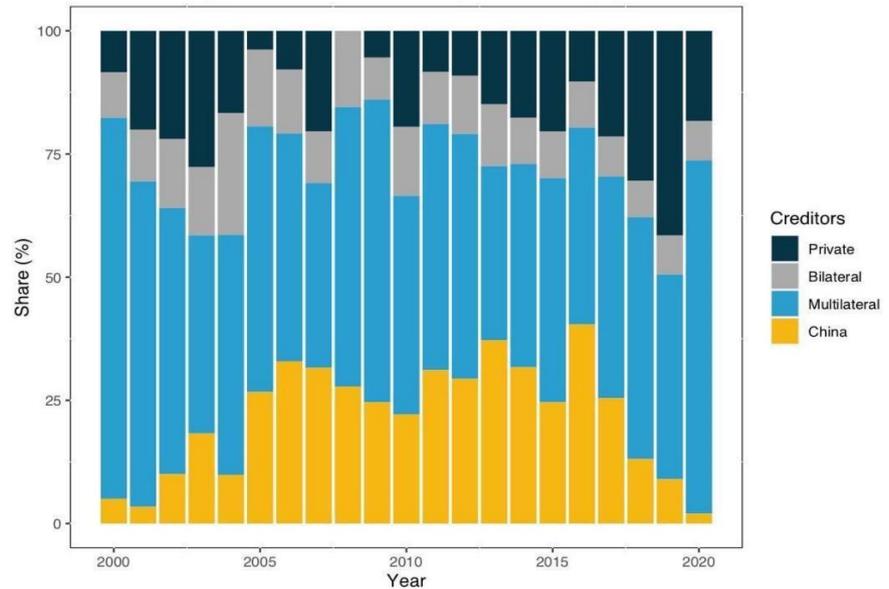
Up until 2016, China’s financial influence in Africa had grown rapidly. With close to US\$ 180 billion worth of loans flowing to Africa, the PRC became its largest bilateral creditor, accounting for 50% of African bilateral PPG stocks and 16% of the total in 2019 (see **Figure 1** above). Starting at only US\$ 0.4 billion in 2000, loans reached US\$ 32.8. billion in 2016. While Angola constitutes the biggest outlier in the sample with almost US\$ 50 billion borrowed, countries such as Ethiopia, Kenya, or Zambia still display high levels of indebtedness to China (See **Figure 11**).



**Figure 11.** Top 10 African loan recipient countries over our period of interest (2000–2020).

However, focusing on the evolution of Chinese lending over time reveals that loan amounts began to decrease after 2016. By 2019, lending returned to 2007 levels of around US\$ 6.8 billion. Indeed, this significant fall has been generally less emphasized in the media and the literature, though Moore (2018) and Sun (2018) attribute this to a consistent reduction in China’s pledge multipliers at each summit.

**Figure 12** reveals China’s decline in lending relative to other country lenders over the last two decades. In 2000, the PRC accounted for 5% of total lending, against 77% for multilateral creditors. Sixteen years later, they account together for 80% of total lending, sharing an equal part of 40%. Nonetheless, China effectively fell back to 13% in 2018, to 9% in 2019 and to only 2% in 2020, leaving other lenders to fill the gap.

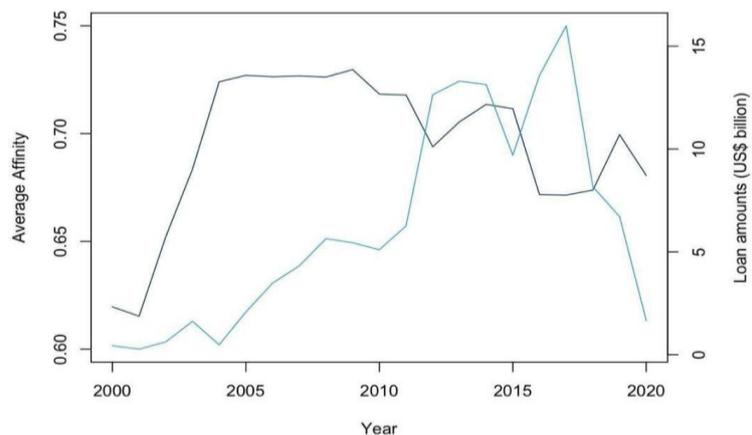


**Figure 12.** Share of loans (% of total) by type of creditor by year (2000–2020).

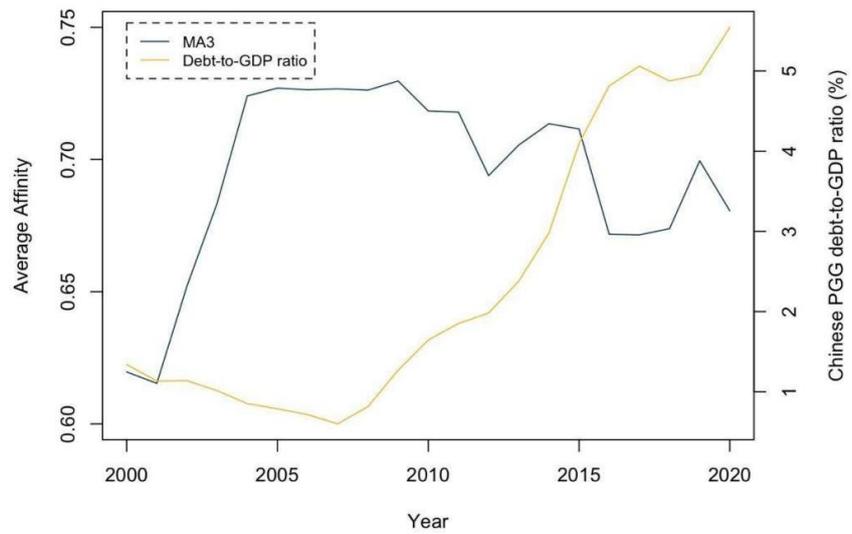
#### 4.5. Debt risk and affinity

Like other observers (Sun, 2018; Sun, 2021), we argue that the shift in the pattern and size of Chinese lending after 2016 is a sign of either a retrenchment from its historic interest in Africa or a change of geopolitical strategy. This new dynamic may be linked to the concomitant deterioration in policy alignment that began in the 2010s, as discussed above.

**Figures 13 and 14** provide some graphical evidence that loans had a positive effect on bilateral relations when they did not increase sovereign debt risk through the debt-to-GDP ratio channel<sup>11</sup>.



**Figure 13.** Chinese loan amounts and MA3 voting affinity (2000–2020).



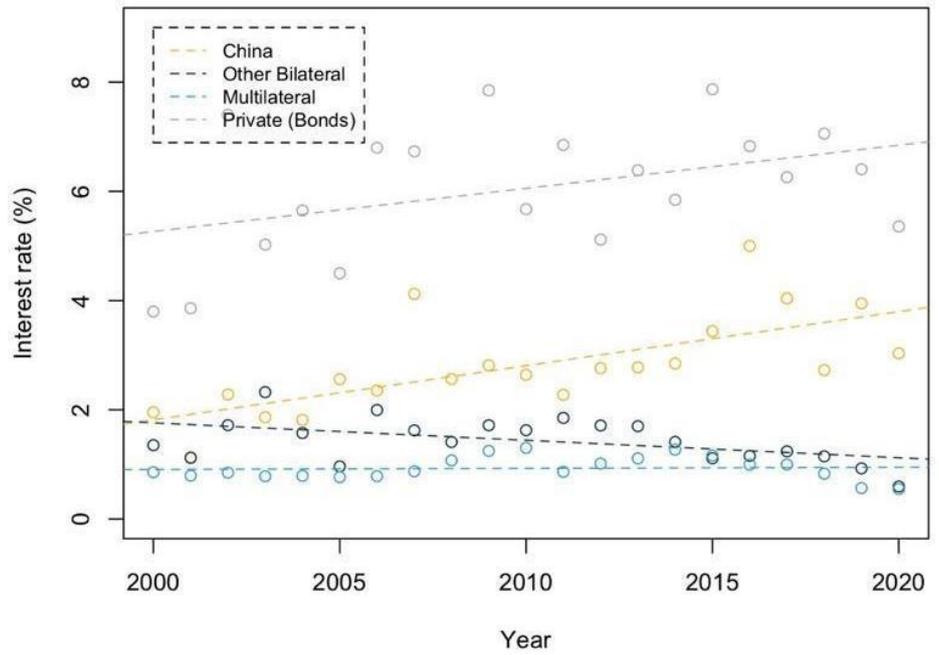
**Figure 14.** Chinese PGG debt-to-GDP ratio and MA3 voting affinity (2000–2020).

We note that both lending and voting affinity grow together during the first ten years of our period of interest. However, the pattern over the following ten years indicates that greater debt risks are associated with falling affinity measures. The aggregate outstanding debt owed by African countries to China represented less than 1% of their total GDP in 2007, but close to 5% in 2019. It therefore seems that the significant increase in loan amounts at the beginning of the 2010s contributed to the increase in debt-to-GDP ratios<sup>12</sup> which, in turn, might have eroded political alignment and pushed Beijing to scale down its lending activities in the continent.

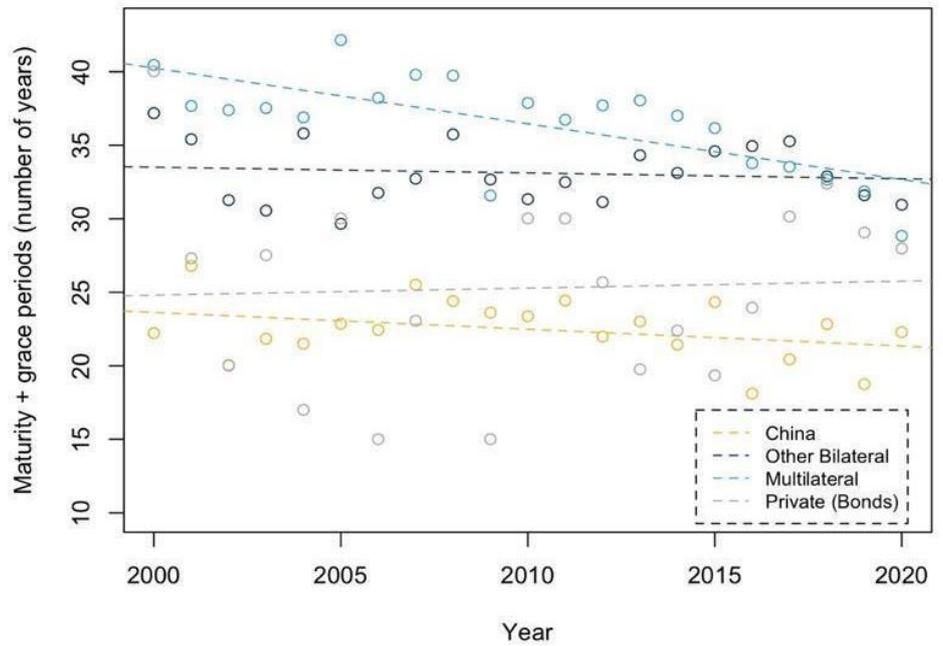
#### 4.6. Lending with Chinese characteristics

Debt servicing factors can also help explain variation in voting affinity. A comparative analysis of China’s interest rates, maturities, and grace periods extended to African governments with those of other creditors shows evidence of tighter Chinese loan terms. Overall, Chinese contracts impose higher interest rates and shorter maturities than other lenders (see **Table B3** in Appendix B). Throughout our study period, China’s mean interest rate was 3.12%, which is higher than that of multilateral creditors and other bilateral creditors (mainly the Paris Club), standing at 0.93% and 1.39% respectively. It is however lower than the interest rate given by private creditors (external bonds<sup>13</sup>) which is 6.25%.

For example, the combined maturities and grace periods for Chinese loans average 22 years, which is less than any other lender. Multilateral, bilateral, and private lenders respectively offer 36, 33, and 27 years on average. Moreover, these stricter Chinese loan terms worsened over time. **Figure 15** shows that Chinese creditors increased interest rates between 2000 and 2020 while multilateral and bilateral creditors did not. Also, **Figure 16** illustrates a decline in the average of combined maturities and grace periods for Chinese loans during this time while that of the Paris Club and bonds remains constant. Although such periods of multilateral creditors’ figures are decreasing, they start from a much higher level compared to China. Ultimately, we argue that relatively stricter and worsening Chinese loan terms over time potentially decrease bilateral affinity.

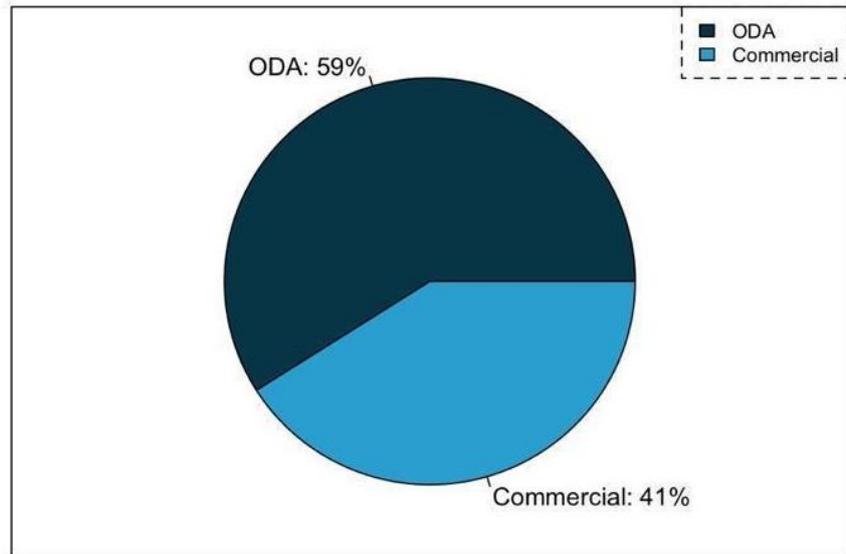


**Figure 15.** Average interest rate by type of creditor by year (2000–2020).

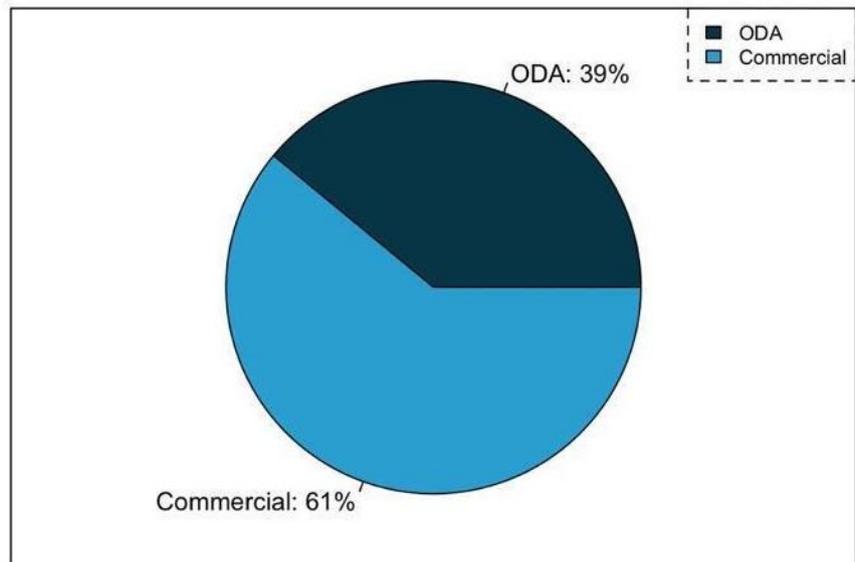


**Figure 16.** Average combined maturity and grace period by type of creditor by year (2000–2020).

Separating ODA from commercial loans reveals that, even though 59% of loan contracts are concessional, they only represent 39% in value terms<sup>14</sup> (see **Figures 17** and **18**). Moreover, when separating our sample into African countries having received less than 50% of ODA on our period of interest and African countries with more than 50%, the average affinity scores are 0.68 and 0.71, respectively. This implies that the more commercial the loans, the less affinity there is.



**Figure 17.** Share of ODA vs. commercial contracts (% of total) over our period of interest (2000–2020).



**Figure 18.** Share of ODA vs. commercial loan amounts (% of total) over our period of interest (2000–2020).

#### 4.7. Signs of “debt-trap diplomacy”

The ambiguous nature behind the agenda and sustainability of Beijing’s lending activities in Africa led to the emergence of the “debt-trap diplomacy” narrative. While the large loan amounts and increasing borrowing costs may constitute a quantitative component of this narrative, it is also defined by qualitative characteristics. Despite the recurrent political rhetoric describing win-win relationships, China’s sovereign loans are likely motivated more by economic self-interest than by enhancing the development of African countries. For example, the relatively small amount of Chinese FDI into Africa shows evidence that China’s involvement is not intended to transfer skills or technology (Kinyondo, 2019). Chinese companies in Africa import Chinese workers to build the infrastructure or industrial projects being financed, at the

expense of the local labour force. It appears that the PRC has little interest in stimulating the African job market (Chellaney, 2017; Le Goff, 2017).

Indeed, the majority of loans target infrastructure development, with almost 60% of the contracts channelled to the transport, ICT, power and water sectors (see **Table B4** in Appendix B). In comparison, the health and education sectors represent respectively only 2.6% and 2.8%. Furthermore, 54% of the loan amounts committed to Africa in our sample is granted to the top ten resource-rich countries<sup>15</sup>. Indeed, collateralized lending represents approximately 50% of the Chinese contracts, corroborating the theory that Beijing regularly requires more collateral to secure its loans, typically in the form of resource payments, as compared with traditional creditors (Horn et al., 2021).

Serious concerns have also arisen from rather opaque lending practices employed by Chinese creditors, such as imposing strategic asset seizures in the case of loan default. Chellaney (2017) mentions the typical case of the Hambantota port, which was taken over by a Chinese state-owned enterprise in 2017 after the Sri Lankan government defaulted while facing considerable financial difficulties. Similar risks of Chinese asset seizures were feared by countries across Africa. Numerous rumors emerged around the potential loss of a power facility in Zambia to the benefit of China, as well as the use of the Kenyan Mombasa port as collateral for the Standard Gauge Railway loan repayment. These situations can be explained by waivers of sovereign immunity found in the majority of Chinese contracts (Brautigam and Kidane, 2020).

The use of non-disclosure agreements and confidentiality clauses became systematic in Chinese loan contracts after 2014, adding to the opacity of China's loan policies (Gelpern et al., 2021) (see Section IV in Appendix A).

Further, Chinese creditors rarely offer debt forgiveness during periods of repayment difficulties. They instead only negotiate bilaterally and deal on a loan-by-loan basis (Acker et al., 2020). As a result, apart from zero-interest loans that can be cancelled, the vast majority of loans are subject to restructuring, typically involving the rescheduling of maturities or reprofiling of interest rates, giving the PRC a certain seniority compared to other creditors<sup>16</sup>.

To summarise, Chinese official lending practices reveal that they can be detrimental and deceiving, which can contribute to the degradation of bilateral foreign policy affinity. From a more quantitative standpoint, the growing size of accepted Chinese loans, combined with the worsening of their terms over the years, can explain the increasing risk of sovereign debt issues for African countries. The “debt-trap diplomacy” narrative, through both its qualitative and quantitative components, may indeed have had a negative impact on voting sentiments towards Beijing<sup>17</sup>.

#### **4.8. Control variables**

Descriptive statistics for our economic and political control variables are discussed in Section V in Appendix A.

### **5. Empirical strategy**

We employ a three-step methodology to estimate the impact of Chinese loans on bilateral political alignment with African countries. This methodology adjusts for the

potential endogeneity bias arising from our loan variable. First, we implement a panel fixed-effects approach to draw out initial trends. Then, we use a fixed-effects TSLS model, with the Chinese debt-to-GDP ratios as our instrument variable, to correct for the endogeneity of our baseline specification. Finally, we implement robustness checks to confirm our results and main hypotheses.

### 5.1. Country fixed effects

Our baseline panel specification uses a country fixed-effects specification to account for unobserved, time invariant characteristics that are specific to each African country. Common examples used to illustrate country fixed-effects are geography, institutions, or culture<sup>18</sup>. The Hausman Test reveals that a fixed-effects specification is more suitable than a random-effects<sup>19</sup>.

$$y_{it} = \alpha_i + \beta \text{loan}_{it} + x'_{it}\Omega + \epsilon_{it}$$

For any African country  $i$  and year  $t$ , our outcome variables of interest,  $y_{it}$  are either the baseline voting affinity score or its MA3 version. Our independent variable,  $\text{loan}_{it}$  represents the loan amount received per country per year in US\$ billion. Our vector of control variables,  $x'_{it}$ , includes bilateral trade balance in US\$ billion, FDI-to-GDP ratios, average interest rates, average combined maturities and grace periods, amount of debt cancelled in US\$ billion, distance from the Chinese democracy score, official visits (0 or 1) and FOCACs (0 or 1).

The country's fixed-effects are denoted by  $\alpha_i$  and consist of country-specific intercepts. The error term is  $\epsilon_{it}$

As explained in Section 1.2, we suspect that our explanatory variable is endogenous, as voting affinity and loan flows can exhibit bi-directional causality. Therefore, we argue that since the PRC's economic and financial influence comes after already existing bilateral relationships, it is appropriate to see loans as a factor of change in alignment rather than the contrary.

### 5.2. Fixed effects TSLS

The instrumental variable in the TSLS specification is the ratio of Chinese PPG debt stocks owed by an African country to that country's GDP. Using a flow variable to emulate a stock variable can reveal more information about the scale of African countries' debt burden, their economic growth situation, and their level of debt risk. Furthermore, this instrument is directly linked to our initial loan variable, but not with the affinity outcome variable or the error term. It therefore satisfies both the IV conditions of relevance and exogeneity. The instrument is relevant because loan flows are one of its components and it is exogenous because it can only affect political alignment via the loan channel. Indeed, the cumulative nature of the Chinese debt-to-GDP ratios variable over the years, the different administrations potentially concerned in its evolution, and its dependence on domestic economic performance, all combine to ensure this IV has an indirect influence on our outcome variable.

The first stage of the TSLS model therefore consists in regressing our instrument on our initial loan amount variable.

$$\text{loan}_{it} = \mu_i + \gamma \text{debtGDP}_{it} + x'_{it}\Omega + \epsilon_{it}$$

Again,  $\mu_i$  represents country fixed-effects, and  $\epsilon_{it}$  the error component. This time, the outcome variable is  $\text{loan}_{it}$  which combines with the variable  $\text{DebtGDP}_{it}$  to form our Chinese debt-to-GDP ratio instrument. For robustness, we also run an additional regression predicting Chinese debt-to-GDP ratios with loans using controls such as loan terms, African countries GDP growth rates, and fiscal balances as a percentage of GDP. In any case, we subsequently use the fitted values provided by the first stage as the new exogenous independent variable in the second stage, which draws on our baseline specification.

$$y_{it} = \alpha_i + \beta \widehat{\text{loan}}_{it} + x'_{it}\Omega + \epsilon_{it}$$

Our affinity and MA3 outcome variables are still denoted by  $y_{it}$ . Our independent variable  $\widehat{\text{loan}}_{it}$  represents the exogenous fitted values stemming from the first stage. Our vector of control variable  $x'_{it}$ , the country fixed-effects  $\alpha_i$ , and the error term  $\epsilon_{it}$ , remain the same.

### 5.3. Robustness checks

To test the robustness of our TSLS model, we implement two types of checks: a change of variables and a change of samples. First, we introduce reduced forms of our main TSLS specification, keeping the same dependent and independent variables but removing successively our political control, loan terms and economic control variables. These simplified versions aim to test the sensitivity of our results to the withdrawal of each dominant group of independent variables as well as to mitigate the analytical complexity brought by the combination of both continuous and dichotomous variables. Second, we return to our baseline panel fixed-effects model, using our Chinese debt-to-GDP variable directly as an independent variable to strengthen the validity of our instrument. The specification remains the same, apart from the use of our Chinese debt-to-GDP instrument as the main regressor.

$$y_{it} = \alpha_i + \beta \text{debtGDP}_{it} + x_{it}\Omega + \epsilon_{it}$$

We then test whether our findings stay robust to reduced and more targeted samples. First, we divide our sample in two, with one comprising 50% of countries that received the highest amount of loans, and the other comprising 50% that received the lowest amount. This allows us to determine whether the effects of our independent variables vary in function of the amounts committed by the PRC. Second, we implement a similar distinction by income categories. We investigate whether the impact is the same or different between countries categorised as either “upper or lower middle income” or “low income”. Finally, we reduce our main sample to the top ten debtor countries as well as to the top ten countries with the highest Chinese debt-to-GDP levels. By doing so, we aim at distinguishing the effect of incremental loans on the countries that borrowed the most from the effect on countries most subject to debt distress. Indeed, contracting great amounts of loans from China does not necessarily imply debt risks.

## 6. Findings

### 6.1. Baseline model

**Table B5** (see Appendix B) presents the results of our initial panel fixed-effects regression, intended to identify the main initial trends. As expected, the negative coefficient estimate is derived for both versions of loan variables, but neither estimate is statistically significant. This may reflect the potential for reverse causality bias and the need to account for it. Section VI in Appendix A describes the estimated coefficients of **Table B5** and identifies the trends for the other variables.

## 6.2. TSLS

**Table 1.** Fixed-effects TSLS.

<b>A. First Stage:</b>		<b>(1)</b>
		<b>Loan</b>
DebtGDP		0.0389*** (0.0059)
<i>R</i> -Squared		0.05
<i>N</i>		903
<i>F</i> -statistic: 43.39	<i>p</i> -value: $7.8079 \times 10^{-11}$	
<b>B. Second Stage:</b>		<b>(1)</b>
	<b>Affinity Score</b>	<b>MA3</b>
LoanHat	-0.0471 (0.0323)	-0.0513* (0.0239)
InterestRate	-0.0025 (0.0039)	-0.0021 (0.0029)
MaturityGrace	0.0004 (0.0005)	0.0002 (0.0004)
DebtCancel	0.1202 (0.3601)	0.1026 (0.2659)
TradeBalance	0.0041* (0.0019)	0.0031* (0.0014)
FDIGDP	0.0090*** (0.0021)	0.0082*** (0.0015)
GDPGrowthChina	0.0124*** (0.0021)	0.0099*** (0.0016)
DistanceRegime	-0.0002 (0.0022)	0.0008 (0.0016)
OfficialVisit	0.0106 (0.0216)	0.0102 (0.0159)
FOCAC	0.0030 (0.0093)	-0.0072 (0.0069)
<i>R</i> -Squared	0.06	0.08
<i>N</i>	903	903

Standard errors in parentheses. .  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Our TSLS specification accounts for potential endogeneity bias. We analyse how the IV behaves and how it can be predicted before running the first stage regression. **Table B6** (see Appendix B) presents the results of a panel fixed-effects using the Chinese debt-to-GDP ratio as the dependent variable and loan flows as the main regressor. As expected, additional loans and rising interest rates increase debt-to-GDP ratios while increasing maturities that spread repayment over longer periods of time

decrease them. Better fiscal positions, entailing fewer borrowing needs, also ease the debt burden. Higher African GDP growth rates simultaneously reduce debt risks and guarantee better future debt servicing capabilities.

The first stage of the TSLS methodology regresses the instrument on loan flows. This presents a positive coefficient that is significant at the 1% level (see **Table 1**), indicating that higher debt-to-GDP ratio on a given year would imply greater loan amounts. A high  $F$ -statistic of 43.4, a very low  $p$ -value, and an  $R$ -Square value of 0.05 together indicate that our instrument is valid and that we can reject the hypothesis of a weak instrument.

The major insight that we can draw from our second stage is that our exogenous loan variable is now significant at the 5% level when using MA3 as the outcome variable. The coefficient estimate of  $-0.051$  suggests a negative effect of loans on bilateral alignment. As one standard deviation in loans (US\$ 0.16 billion) results in a 0.01 decrease in affinity, this impact appears rather modest. However, if we consider a more extreme case in which loan amounts increase by US\$ 500 million in one year, the affinity would be hit harder with a loss of  $-0.03$ .

Our interest rate, maturities, and debt relief regressors present similar results when compared to the baseline panel model, though the coefficient estimates all lack significance. The coefficient estimates for the economic control variables are of similar magnitude as the fixed effects specification results, though the impact of FDI and Chinese GDP on voting affinity is twice as large. An incremental standard deviation in either of these would yield an increase of at least 0.02 in affinity. The  $R$ -Square value improves as well in this specification, achieving a value of 0.06 using the baseline affinity score as outcome variable, and a value of 0.08 using the MA3 variable. From now on, the analysis will use MA3 as the main dependent variable.

For this second stage, the  $p$ -value ( $1.2782 \times 10^{-10}$ ) associated with the  $F$ -test allows us to reject the null hypothesis of all coefficients being equal to zero, meaning that our model is jointly significant. Goodness-of-fit analysis reveals that Root Mean Square Error (RMSE) is equal to 0.09405 while the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) are respectively equal to  $-4249.27$  and  $-4201.21^{20}$ . These will serve as baseline measures for our TSLS specifications' accuracy in predicting voting affinity.

### **6.3. Robustness checks and in-depth analysis**

Our TSLS regression produced a significant (at the 5% level) and negative coefficient estimate for our adjusted loan independent variable. **Table B7** (see Appendix B) presents the results for our TSLS reduced forms. It reveals that this main finding is robust in terms of sign, significance, and magnitude, to the removal of our dichotomous political variables and of our economic and loan terms controls in the second stage. The coefficients associated with controls are similar to those of the main TSLS.  $F$ -tests show that the models are in the three cases jointly significant. Concerning the goodness-of-fit, it appears that the second reduced form specification including only our instrumented loan, trade, FDI, and Chinese GDP control variables is the most accurate in predicting our outcome. Although the RMSE is slightly bigger than in our main model, the AIC and BIC are smaller, which suggests an overall a

better fit most likely caused by the less complex nature of the specification (see **Table B8** in Appendix B for a summary of the goodness-of-fit analysis). Within our framework, this supports that macroeconomic and financial factors present significant and sufficient explanatory power to predict bilateral alignment.

**Table 2** shows that the results remain robust when we use our instrument as the main regressor in a panel fixed-effects specification. Indeed, the Chinese debt-to-GDP ratio estimate displays marginal effects of a similar sign, significance level, and magnitude<sup>21</sup>. As expected, all other variables behave similarly to the TSLS model. In what follows, we will apply this preferred panel model to different samples to derive more focused results.

**Table 2.** Instrument as main regressor.

Dependent Variable	(1)
	MA3
DebtGDPChina	−0.0020* (0.0009)
InterestRate	−0.0021 (0.0029)
MaturityGrace	0.0002 (0.0004)
DebtCancel	0.1026 (0.2659)
TradeBalance	0.0031* (0.0014)
FDIGDP	0.0082*** (0.0021)
GDPGrowthChina	0.0099*** (0.0016)
DistanceRegime	0.0008 (0.0016)
OfficialVisit	0.0102 (0.0159)
FOCAC	−0.0072 (0.0069)
R-Squared	0.08
N	903

Standard errors in parentheses. .  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

We next separate our main sample into two balanced sub-samples, comprised of those countries receiving the highest loan amounts and those receiving the least. These subsamples allow the two groups of countries to display different characteristics. The high loan receiving sample of countries represents the majority of these loans (around US\$ 160 billion), leaving less than US\$ 20 billion for the low loan receiving country sample. The high loan receiving group represents, on average, those countries with higher levels of economic development (mean GDP is US\$ 62 billion against US\$ 11 billion), larger trade volumes with China (US\$ 4 billion against US\$ 0.5 billion), and more Chinese official visits (37 against 8).

This may partly explain this group’s higher than average voting affinity scores (0.76 versus 0.69). Concerning debt related indicators, high loan receiving countries

tend to contract a higher ratio of commercial loans than do low loan receiving countries, with an average interest rate of 1.6% and 0.6% over the whole period, respectively. Logically, their average Chinese debt-to-GDP ratio is also higher, standing at 3.7% against 1.4%.

**Table 3** provides the results of the panel fixed-effects regressions that were run on both samples<sup>22</sup>. The signs of the coefficient estimates for our main debt-to-GDP independent variable in both regressions are consistent with the previous findings, but the interpretation of their magnitudes and marginal effects is uncertain due to the lack of significance (likely due to the reduced number of observations). Nevertheless, we obtain a negative coefficient for interest rates and a positive one for maturities and grace periods using the high receiving sample. The two variables are respectively significant at 5% and 10% levels. As this country group comprised the vast majority of total Chinese lending over the whole period and has generally higher Chinese debt-to-GDP ratios, it is likely to be more sensitive to tighter loan conditions. An increase of one standard deviation in interest rate would result in a decrease of affinity of approximately 0.01. The marginal effect for maturities is also 0.01. **Table B9** in Appendix B presents a similar robustness check which compares high- and low-income groups and shows comparable results.

**Table 3.** High vs. low receiving samples.

Sample:	HighR	LowR
	MA3	MA3
DebtGDPChina	-0.0001 (0.0006)	-0.0035 (0.0046)
InterestRate	-0.0044* (0.0021)	0.0080 (0.0067)
MaturityGrace	0.0006 . (0.0003)	-0.0004 (0.0006)
DebtCancel	0.0458 (0.1694)	0.3519 (0.9310)
TradeBalance	0.0044*** (0.0009)	-0.0225 . (0.0003)
FDIGDP	-0.0026 (0.0019)	0.0157*** (0.0035)
GDPGrowthChina	0.0060*** (0.0015)	0.0135*** (0.0027)
DistanceRegime	0.0062*** (0.0017)	-0.0030 (0.0026)
OfficialVisit	-0.0007 (0.0106)	0.0633 (0.0447)
FOCAC	0.0009 (0.0059)	-0.0131 (0.0119)
R-Squared	0.23	0.10
N	441	462

Standard errors in parentheses. .  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Our final robustness check consists of comparing two homogeneous reduced samples, respectively regrouping the top ten debtor countries vis-à-vis China<sup>23</sup> and the top ten countries with the highest Chinese debt-to-GDP levels<sup>24</sup>. This allows us to test

our main hypothesis, stating that loans are not harmful for bilateral relations if they do not worsen debt sustainability. As contracting loans from China does not necessarily entail risks of debt distress, additional Chinese lending might have different effects according to the country's level of indebtedness toward the PRC. In terms of descriptive statistics, the most salient difference between these two samples lies in their debt-to-GDP ratios. For the top ten debtors, the average Chinese debt stocks account for 3% of their GDP, whereas increases to 6% for the top ten countries most exposed. Moreover, when taking the total external PPG debt-to-GDP levels, including all creditors, the former presents a ratio of 35% while the latter stands at 47%.

The results are displayed in **Table B10** (see Appendix B). Interestingly, our Chinese debt-to-GDP ratio coefficient in the top ten biggest borrowers sample becomes positive and significant at the 1% level. The coefficient for this variable remains negative in the other sample but is not statistically significant. This may suggest that top debtor countries, being at lower levels of exposure to Chinese and other external debt risks, are still inclined to contract for more debt. Our assumption that bilateral political alignment would not be hit if lending does not affect debt risks is thus supported by this result.

Although our main regressor is insignificant in the top ten debt-to-GDP ratios group of countries, certainly due to the lower number of data points included in the analysis, the interest rates and maturities variables present effects that are consistent with the findings of **Table 3**, and with even larger magnitudes. This means that as countries are more at debt risk, they are also more sensitive to loan terms. In the end, the other economic controls used in this step of the analysis seem to yield similar results to the earlier steps. However, our diplomatic controls remain difficult to interpret.

## **7. Conclusion**

Our objective was to examine the impact of sovereign debt on bilateral political relations. Focusing on the case of Chinese official lending to African countries between 2000 and 2020, we employed country-level panel data and implemented a TSLS approach to exogenously estimate the effect of loans on Chinese African voting affinity at the UNGA. We assume loans promote bilateral relations if debt sustainability remains intact, and we use Chinese debt stocks owed by African countries, expressed as a ratio of the countries' GDP, as our instrumental variable. Our analysis first reveals that PRC loans could negatively affect political alignment through increasing debt risk. We also find that loan terms, namely interest rates and maturities, have a negative impact on bilateral alignment among those countries most exposed to Chinese lending, both in terms of absolute amounts and debt-to-GDP ratios. Second, our empirical approach shows that trade balance appreciation, higher FDI and improving Chinese GDP growth rates conversely yield positive effects on Sino-African bilateral relations.

### **7.1. Lend your money, lose your friend**

The main finding of this study suggests that Chinese loans to African countries have negatively affected bilateral foreign policy alignment through the debt-to-GDP

channel. Significant growth in Chinese loan amounts can be observed up until 2016, coupled with increasing interest rates and shorter maturities that appear to have caused an almost exponential rise in aggregate debt-to-GDP levels. This supports the theory that Sino-African bilateral relations were harmed by excessive lending, and that PRC loan diplomacy in Africa was not as effective as many had thought. Although we consider that part of the qualitative assessment of the “debt-trap diplomacy” narrative is conceptually flawed and lacks empirical support (see section 7.4), we nonetheless argue that it has overall altered China’s image in Africa, generating discontent at both governmental and civil society levels. Finding specific evidence that the quantitative component of that narrative, namely China’s acquisitive lending practices in terms of loan sizes and terms, degraded debt sustainability, our analysis supports that this contributed to the erosion of African sentiment towards China which eventually damaged the average level of voting affinity across its borrower nations.

Facilitating such large loans to African countries under increasingly demanding repayment terms surely increased African indebtedness and default risks. This, at a time when GDP growth among African countries started to fall precipitously in 2014–2016, as oil and commodity price shocks befell the region. As the lending nation, the PRC faced climbing sovereign debt issues, considerably altering China’s expected financial returns. While Beijing restructured less than US\$ 0.5 billion worth of debt between 2000 and 2015, the amount skyrocketed to almost US\$ 15 billion between 2015 and 2019 as countries such as Angola, Chad, the Republic of Congo, Ethiopia, or Mozambique asked for special debt treatment (Acker et al., 2020). This further supports the emergence of the “debt-trap diplomacy” narrative starting in 2017, as well as the ensuing international pressure around Chinese lending practices.

## **7.2. Change of strategy**

The resulting decline in bilateral political alignment between African countries and China appears to have forced the PRC to change course in its loan diplomacy. This evolution can be detailed in three steps. First, reduced loan amounts from China, even prior to the COVID-19 shock, was the first sign of a strategic recalibration from Beijing (The Economist, 2023). While the 2018 FOCAC saw an unprecedented scale-down of Chinese loan commitments to US\$ 40 billion (Moore, 2018), loan packages of identical size but with a substantially reduced number of projects were announced at the Dakar and Beijing meetings of 2021 and 2024, promoting also the new “small is beautiful” paradigm which targets smaller, less risky ventures (Chen and Cash, 2024; Sun, 2021). In addition, the PRC declared that loans would now be disbursed to African financial institutions as intermediary decision-makers, rather than disbursed directly to African governments (Cao and Chen, 2021). In this way, China mitigates the risk of additional exposure to African debt complications (Engel et al., 2024).

Second, this more reasoned lending strategy reflected a change of attitudes toward debt relief. The COVID-19 lockdowns and subsequent economic slowdowns have led to higher debt risk levels for many African countries as it triggered general revenue losses, increasing borrowing needs to finance healthcare support and economic stimulus, and thus reduced fiscal space and debt servicing capacity (OECD, 2021). According to the IMF Debt Sustainability Analysis (2024), 22 African

countries were in debt distress or at high risk of debt distress in 2021 against 16 in 2019, subsequently implying sovereign credit rating downgrades (Kose et al., 2021). While Beijing was initially reluctant to commit itself fully, causing even more international and local “debt-trap” related critics, it eventually participated in the Debt Service Suspension Initiative (DSSI) and Common Framework for Debt Treatments, both aimed at providing payment deferrals and debt restructuring to countries in distress after the pandemic. This illustrates its will to appear more as a “partner [rather than] a predator” (Vines et al., 2022) given that it took a large share of the blame in the degradation of African external debt positions.

Third, as the 2021 and 2024 FOCACs suggested shifting away from investing primarily in the infrastructure sectors (Sun, 2021), the PRC turned toward convergence with African and UN objectives to promote sustainable development and trade rebalancing. PRC’s emphasis on infrastructure investments was replaced by new areas of cooperation in sectors such as industry, agriculture, health, climate, and technology (Osman, 2022; Cao and Chen, 2021). The increase in Chinese trade credit and foreign direct investment in these sectors reflects China’s desire to stimulate growth in African exports. Moreover, the creation of a US\$ 10 billion trade facilitation fund for Chinese private companies in the 2018 FOCAC, reconducted in the Dakar commitments, the birth of the African Continental Free Trade Area (AfCFTA) in 2021, and the emphasis placed on industrial and agricultural cooperation in 2024 are all intended to foster company-to-company investments rather than government-to-government capital flows (Sun, 2018, 2024). In contrast to loans, Chinese FDI flows to Africa have remained at pre-COVID levels in 2021 (CARI, 2024). Interestingly, trade and FDI are two variables that yield positive effects on political alignment in our model.

### **7.3. What it means for the future of China-Africa relations**

Indeed, our empirical analysis shows that while excessive Chinese lending is detrimental to bilateral political relations, rebalancing trade and intensifying FDI is beneficial. A single standard deviation in our trade and FDI-to-GDP ratio variables produces marginal effects that are respectively similar to and twice as large as those of our debt-to-GDP instrument. In the perspective of regaining political ground in African countries through economic and financial channels, these findings clearly suggest that the PRC should reduce official lending and, instead, foster African domestic production. The Chinese strategic pivot and the recent FOCAC developments tend to be in line with what our model supports. In light of this, we posit that the future of China-Africa relations should be characterised by a transition from loans to trade-oriented FDI, a decrease in the involvement of the Chinese state-owned financial sector to the benefit of private players, and a more effective integration of the Chinese and African development agendas, views that are shared by other observers (Chen et al., 2024; Eguegu and Fu, 2021; Munyati, 2024; Sun, 2018).

With fewer new Chinese loans, previously extended loans gradually reaching maturity, and substantial recourse to domestic borrowing as a result of the COVID-19 pandemic (Kose et al., 2021), African governments are likely to be less exposed to external Chinese debt risks in the medium term. The PRC’s more risk-averse approach to official lending in Africa, using financial institutions as intermediaries and targeting

smaller, high-impact projects rather than massive infrastructure developments, is also expected to mitigate future debt complications (Engel et al., 2024). Drawing on our results, China may nevertheless still have room to grant loans to African countries that have historically received smaller amounts and are at low risk of over-indebtedness. Overall, Chinese state-owned lending is set to decline and be redirected towards trade purposes and FDI.

The recent emphasis placed on investment in new areas of cooperation with a strong export focus for African countries indicates that the Chinese private sector should play a more important role in the near future (Munyati, 2024). With regard to the 2024 FOCAC commitments, China is likely to increase FDI in the manufacturing, agribusiness, and digital economy sectors. While this is a means for China to outsource low-cost production, secure food supply, and give Chinese tech giants access to new markets, it also strongly supports the build-up of industrial capacities, local job creation, and the diversification of the African economy. The coordination of the AfCFTA and the BRI should in addition act as a trade catalyst through deeper integration of regional value chains and synergies between industrialization and already existing infrastructure (Eguegu and Fu, 2021; Usman and Xiaoyang, 2024).

Ultimately, while we argue that the reduction of exposure to Chinese loans, industrial development and eventual trade rebalancing are likely to be positive for African countries' economic sovereignty in the long term, we also stress that China-Africa relations are likely to be generally marked by a lower degree of Chinese engagement compared to pre-COVID years. PRC's economy has been slowing down for years due to both external factors and domestic restructuring, pointing towards the fact that China has been closing in on itself rather than continuing its expansion overseas (see Section 7.4). Although it is key to acknowledge this reduced presence, Africa remains a strategic area of cooperation for Beijing. As the PRC no longer benefits from the labour premium due to its ageing population and has higher labour costs as it is climbing up the value chain, Africa constitutes a viable solution to relocate low-end production as well as a fast-growing market for its own goods (Usman and Xiaoyan 2024; Chen et al., 2024; Yu, 2021). The economic agendas of China and Africa could therefore prove highly complementary in the future.

#### **7.4. Mitigating factors**

We showed that our trade and FDI control variables can help assess the future of Sino-African relations within our conceptual framework. However, these also have strong explanatory power when it comes to nuancing our empirical findings. Although it is clear that loans had negative repercussions on political alignment, the widening African trade deficit, the Chinese economic slowdown, and the relatively low levels of FDI over our period of interest should not be underestimated. These results indicate that a single standard deviation increase for both FDI-to-GDP ratios and Chinese GDP growth rates yields a positive marginal effect that is more than twice the magnitude of our Chinese debt-to-GDP variable<sup>25</sup>. Yet, FDI flows represented only a quarter of total lending over our study period, such that this positive impact did not completely mitigate the loss of voting affinity from an increase in debt risks. Also, as PRC domestic economic performance started to fall after 2007, voting alignment

continuously declined. Further, though the positive marginal impact of trade balances is similar in magnitude to the instrument variable proxying debt ratios, the massive drop in trade balances of 2014–2016 caused an extensive reduction in the affinity score that exacerbated the debt-trap effect. Sovereign debt issues are thus not the only cause for deteriorating bilateral relations.

These elements demonstrate the heavy dependence of African countries on PRC economic health. Chen et al. (2024) estimate that “a 1 percentage point decline in China’s real GDP growth rate leads to about 0.25 percentage points decline in sub-Saharan Africa’s total GDP growth within a year”. As China’s economic slowdown has left it with less capacity to project itself, one can understand how it negatively affected African economies and, in turn, voting affinity. The Sino-American trade war that began in 2018, the introduction of the “dual circulation” paradigm refocusing Chinese growth on internal factors, the rising levels of domestic household and private debt, and the more general geopolitical tensions are all examples indicating a Chinese retrenchment.

### **7.5. Tempering the “debt-trap diplomacy” narrative**

Our analysis proves that loans exerted a weaker impact on African voting affinity relative to the economic controls. First, it implies that the “debt-trap diplomacy” narrative is less robust than previously thought. Beijing clearly established a strong African dependence on its financing through very singular and demanding lending practices. However, concluding that it purposefully ensnared African countries into an accumulation of debt that they could not repay is not realistic. While the “debt-trap diplomacy” concept negatively affected China’s image in Africa, this impact was likely weaker than had been suggested in the media.

Moses et al., (2023) posit that African countries continued to borrow large sums at even higher rates and shorter maturities than the traditional markets primarily because Chinese lenders better matched their true demands. Thus, the PRC became an increasingly attractive partner compared with multilateral and Paris Club creditors because it imposed less stringent conditions. Unlike traditional Western lenders, Beijing did not impose democratic, human rights, or environmental protections as requirements in its contracts (Pairault, 2021). The PRC sought result-oriented, rapid implementation processes, and did not hesitate to finance costly infrastructure projects that others refused.

Second, the debt-trap concept often lacks objective, empirical evidence. Multiple studies have shown that, apart from the Hambantota port case, no evidence of asset seizures arising from PRC loan defaults exists (Brautigam et al., 2021; Moses et al., 2023; Singh, 2020). This illustrates that many false ideas were associated with China’s lending practices, obscuring the possibility that African governments may have made poor debt management (Vines et al., 2022). Further, the booming bonds emission period during the late 2010s (see **Figure 12**) is often ignored. According to Debt Justice (2022), Africa owed three times more debt to private creditors than to the PRC. China certainly weighs heavily in African sovereign debts, but multilateral and private creditors together play a much more important role (Chen et al., 2024).

Finally, the “debt-trap diplomacy” narrative contains numerous theoretical and conceptual flaws. By suggesting that African governments are not in control of their borrowing decisions, this narrative overlays a reductive and victimising view on these issues (Moses et al., 2023). Also, claiming that China is knowingly providing unsustainable loans must be weighed against the predictable and considerable loss in profits. Bindra (2018) notes that aid and loans are never unconditional, and are often a means for advanced economies to project their political and economic power. Indeed, Reynaud and Vauday (2008) found that even the IMF is allocating loan programs to address issues of geopolitical importance. It is wrong to consider African governments as too naïve to recognize this reality.

## **7.6. Concluding remarks**

African countries have suffered many economic challenges, from a deepening of their trade deficit in 2014–2016 to generally low levels of Chinese FDI flows. These events could explain, in addition to the impact of both the Chinese official lending and the “debt-trap diplomacy” narrative, why bilateral affinity with China fell during this period, which is why we included such control variables in our analysis. We find that various economic control variables, such as trade, FDI and Chinese GDP growth, all had positive effects on the outcome variable, and with even greater magnitudes than relative indebtedness. Thus, we argue that finding empirical evidence supporting these additional influences points out the limitations of this “debt-trap” narrative and paves the way for the future of China-Africa relations.

On net, China’s official lending seems to have created a barrier to its “coalition-building” strategy. As the accumulation of Chinese loans has left many African countries in difficult debt situations, the PRC has already shouldered, and will probably continue to bear, a significant share of the blame. However, China’s changing economic and financial approach to Africa, deemphasizing lending but bolstering other channels and sectors, could reverse the trend in the coming years. Our findings indicate that any PRC’s future efforts at easing debt burdens through the reduction of loan flows, the promotion of trade and FDI, and the development of other areas of partnership, may allow the PRC to regain favour among African countries.

Rather than inducing African indebtedness as a tool for implementing a long-term grand strategy for global hegemony, perhaps the PRC is merely adapting to economic adversity, changing political scenarios, and accommodating its domestic economic needs. Beijing’s strategy would thus consist primarily of a responsive process, rather than instituting a clear strategic vision (Stec, 2018). While the traditional version of “coalition building” may lead to the formation of solid, cohesive geopolitical blocks, the Chinese approach reflects the more flexible concept of “tianxia”, meaning “all under heaven”, which sees the PRC’s spheres of influence as concentric circles that expand and contract in accordance with its own agenda. China’s footprint in Africa may seem less conspicuous in the short-term, but its influence is there to stay and is likely to evolve into a new form of “Beijing consensus”.

**Author contributions:** Conceptualization, CD, JBM and JFDM; methodology, CD; software, CD; validation, CD, JBM and JFDM; formal analysis, CD; investigation, CD; resources, CD; data curation, CD; writing—original draft preparation, CD;

writing—review and editing, CD; visualization, CD; supervision, JBM and JFDM; project administration, JBM and JFDM; funding acquisition, JBM and JFDM. All authors have read and agreed to the published version of the manuscript.

**Funding:** Clément DURIF has received research support from Asia Centre. This work is part of a European Commission project “China Horizons” (formal name is “Dealing with a resurgent China” or DWARC) which has received funding from the European Union’s Horizon Europe research and innovation program under grant agreement number 101061700. The project is one of the EU-funded flagship projects to upgrade independent knowledge on China in Europe. The three-year project started in November 2022.

**Data availability statements:** All data generated or analyzed during this study are included in this article.

**Conflict of interest:** The authors declare no conflict of interest.

## Notes

- <sup>1</sup> The “Going Global” or “Going Out” strategy is a foreign policy coined by the PRC under President Jiang Zemin to foster overseas investments.
- <sup>2</sup> The OECD defines ODA as loans provided by official creditors at concessional rates and having the promotion of economic development and welfare in developing countries as main objective.
- <sup>3</sup> “The phrase “Global South” refers broadly to the regions of Latin America, Asia, Africa, and Oceania. It is one of a family of terms, including “Third World” and “Periphery,” that denote regions outside Europe and North America, mostly (though not all) low-income and often politically or culturally marginalized.” (Connell and Dados, 2012).
- <sup>4</sup> 15 African countries abstained, 7 were absent, 2 votes against (see Section I in Appendix A).
- <sup>5</sup> The Multilateral Debt Relief Initiative (MDRI) was adopted by the IMF in 2005 to cancel claims of multilateral creditors for countries that reached or had almost reached the completion point set under the Highly Indebted Poor Countries Initiative (HIPC) <https://www.imf.org/external/np/exr/mdri/eng/index.htm>
- <sup>6</sup> For the sake of clarity, we mean PPG debt stocks owed by African countries to China as a ratio of their GDP.
- <sup>7</sup> Later relayed by the Global Development Policy Center of the Boston University and its Chinese Loans to Africa database.
- <sup>8</sup> Data on UNGA voting for Algeria, Libya and Zimbabwe is incomplete. Data on Chinese loans for Eswatini, Guinea-Bissau, Sao Tome and Principe, and Somalia is not available. This makes a total of seven excluded countries.
- <sup>9</sup> We use the sum of maturities and grace periods rather than treating them separately.
- <sup>10</sup> Typically, we can associate the 2014 increase in the share of votes of the Other category to the Crimea invasion. Similarly the 2016 increase in the votes relating to the NUC/DIS category is the consequence of the Iran Nuclear Deal.
- <sup>11</sup> For the sake of unbiasedness, Angola, which is a substantial outlier, has been removed from the sample used for these graphs.
- <sup>12</sup> The mathematical relationship between Chinese loans and debt-to-GDP ratio allows us to assume this without doubts. An increase in the size of loans will trigger an increase at the numerator of the ratio. Indeed, African countries GDP also affect the ratio through the denominator.
- <sup>13</sup> The ADD only collected data on bond issuances concerning private creditors. “Private creditors” and “bonds” are therefore the same in our analysis.
- <sup>14</sup> Of the 1122 loan commitments, 661 are ODA and 461 are commercial. Of the US\$ 178 billion worth of loans, US\$ 69 billion is ODA and US\$ 108 billion is commercial.
- <sup>15</sup> For the identification of resource-rich countries, we follow the classification made by Izvorski et al. (2018) taking per capita natural resource endowment as main indicator. The top ten resource-rich countries in our sample are: Angola, Botswana, Equatorial Guinea, Gabon, Nigeria, Republic of Congo, South Africa, Sudan, Tanzania, Zambia.
- <sup>16</sup> Between 2000 and 2019, approximately US\$ 3 billion were cancelled and US\$ 15 billion were restructured (Ibid).
- <sup>17</sup> Vines et al. (2022) show how, in the case of Zambia, local civil society expresses its resentment towards China because of its lack of clarity regarding its involvement and its desire to establish political influence in the country.

- 18 These variables are different across countries but do not vary over time, or, at least, vary at a constant rate.
- 19 The Hausman Test yields a  $p$ -value of 0.00009 which allows us to reject the null hypothesis that a random-effects model is preferred.
- 20 When comparing models, lower values for RMSE, AIC, BIC indicate a better fit of the model relative to others.
- 21 One standard deviation in Chinese debt-to-GDP ratio, which is 4.9 percentage point, also results in a 0.01 decrease in voting alignment score.
- 22  $R$ -Squared values improve again with this specification with respectively of 0.23 and 0.10.
- 23 List top ten debtors: Angola, Ethiopia, Zambia, Kenya, South Africa, Sudan, Nigeria, Democratic Republic of Congo, Egypt, Ghana.
- 24 List top ten Chinese debt-to-GDP ratios: Djibouti, Republic of Congo, Angola, Zambia, Mozambique, Ethiopia, Togo, Democratic Republic of Congo, Sudan, Mauritania.
- 25 The marginal effect of Chinese debt-to-GDP ratios being negative.

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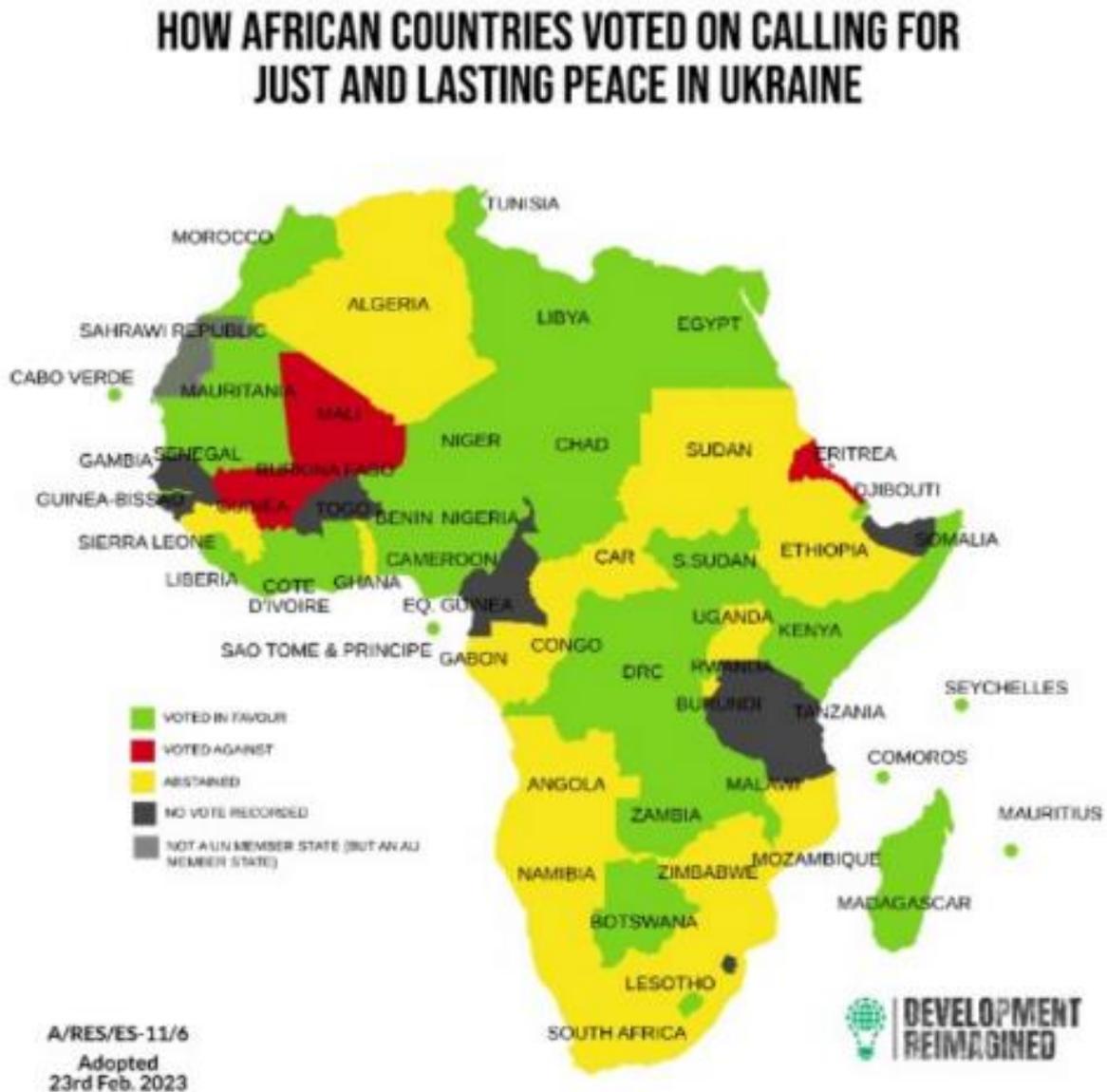
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## Appendix A

### I. African votes on UNGA Ukraine resolution



**Figure A1.** African votes on UNGA Ukraine resolution.

Source: <https://developmentreimagined.com/africanvotesonukraine/>

### II. UNGA voting ideal points



Figure A2. UNGA voting ideal points.

Source: Fung and Lam, 2022.

### III. Data: Variables’ construction and sources

#### i. Dependent variable

This study covers 47 African countries over the period 2000–2020. We exclude some countries from our scope of study due to the absence of data<sup>1</sup>. Similarly, our period of interest begins in 2000, as data on 1 Chinese lending in Africa prior to that year is unavailable.

We construct our dependent variable using the dataset from Voeten et al. (2022), which tracks all roll-call votes at the UNGA from 1946 to 2021. It provides the vote for all countries on each resolution: yes (coded 1); abstain (2); no (3); absent (8); not a member (9) at the time of the vote (see **Table B1**). Notably, each vote is assigned to a related category: Middle-East (ME), Nuclear (NUC), Disarmament (DIS), Human Rights (HR), Colonialism (CO) and Economic and Social Development (EC). ME refers mainly to Israeli-Palestinian issues and represents 20% of the votes. NU and DIS include all resolutions relating to non-proliferation agreements. Together they account for 26% of the total. As for HR, CO and EC categories, they represent 29%. Since 25% of votes were not assigned in the raw data, we added a category named “Other”.

#### ii. Voting affinity score

We use 1630 resolution votes to construct a voting affinity score, based on voting dyadic interactions between each African country and the PRC. Thus, for any given resolution, we can determine whether these votes are aligned. The affinity is coded 1 if the votes for a given resolution are similar, and 0 if not. When China does not abstain on a vote and the African country does, the affinity is coded as 0.5 (counted as half an affinity due to the ambiguity of abstention). As China is the reference voter, we do not consider the inverse case.

We measure the patterns of African countries' votes as a function of the PRC votes, but not the inverse. Note that the vote choice "not a member" is not included, as South Sudan was not admitted as a UN member until 2011 ("not a member" yields 0 for any Chinese vote). Thus, for any country  $i$ , and for any resolution vote  $j$ , we can denote the primary affinity score by:

$$x_{ij} \in \{1, 0, 0.5\}$$

Our goal is to compute a voting affinity measure by country by year. The final score takes the form of a simple average that, for any country  $i$ , a number of resolutions  $n$ , in a given year  $t$ , can be read as a percentage and is denoted by:

$$aff_{it} = \frac{\sum_{j=1}^n x_{ij}}{n}$$

We consider that the UNGA voting record is the most straightforward proxy for measuring countries' preferences and alignment on international policy issues every year, as these non-binding votes reflect the "commitments and strategic interests of all member states" (Fung and Lam, 2022).

### iii. Independent variables

Concerning our loan variables, we mainly exploit the Africa Debt Database (ADD), built by Mihalyi and Trebesch (2023) from the Kiel Institute for the World Economy. We also use the Chinese Loans to Africa (CLA) data initially curated by China Africa Research Initiative (CARI) and recently transferred to the Global Development Center of Boston University<sup>2</sup>. From these sources we collected 1122 loan 2 commitments from Chinese policy and commercial banks, government entities, companies, and other financiers to African governments and state-owned enterprises between 2000 and 2020<sup>3</sup>. The loans are 3 denoted in US\$ billion and are presented across different segmentations: lender, lender type, targeted sector, etc. Moreover, these databases also provide the terms under which the loans were contracted: interest rate, maturity, grace periods. Further, the ADD provides us with similar information for multilateral, private, and other bilateral creditors, allowing us to introduce a comparative analysis with China. Finally, we retrieved debt cancellation and restructuring data on Chinese debt relief to African countries from CARI.

As a result, our primary independent variable is the aggregate of all Chinese loans per African country per year. In addition, we compute the average interest rate and the average of the combination of both maturities and grace periods<sup>4</sup> per country per year. We consider as ODA all loans that are extended with 4 an interest rate strictly smaller than 4% and a maturity strictly larger than 18 years. All other loans then fall into the commercial category. Finally, we also construct a debt relief variable indicating the amount of debt canceled for the countries and years concerned. We omit information on restructuring because of data scarcity.

### iv. The instrument: Chinese debt stocks-to-GDP

Since we suspect an endogeneity bias in our main independent variable, we collected data on African countries' outstanding external PPG debt from the WB International Debt Statistics data portal. We construct our debt-to-GDP ratio variables using both total and Chinese PPG external debt outstanding, by country and by year. Creating this variable introduces a debt risk, or debt sustainability, dimension to our data. This gives us a total debt-to-GDP ratio, as well as a PRC-specific debt-to-GDP ratio, where the latter is used as an instrument for our loan variable. This variable also enables us to calculate the share of Chinese PPG debt in the total.

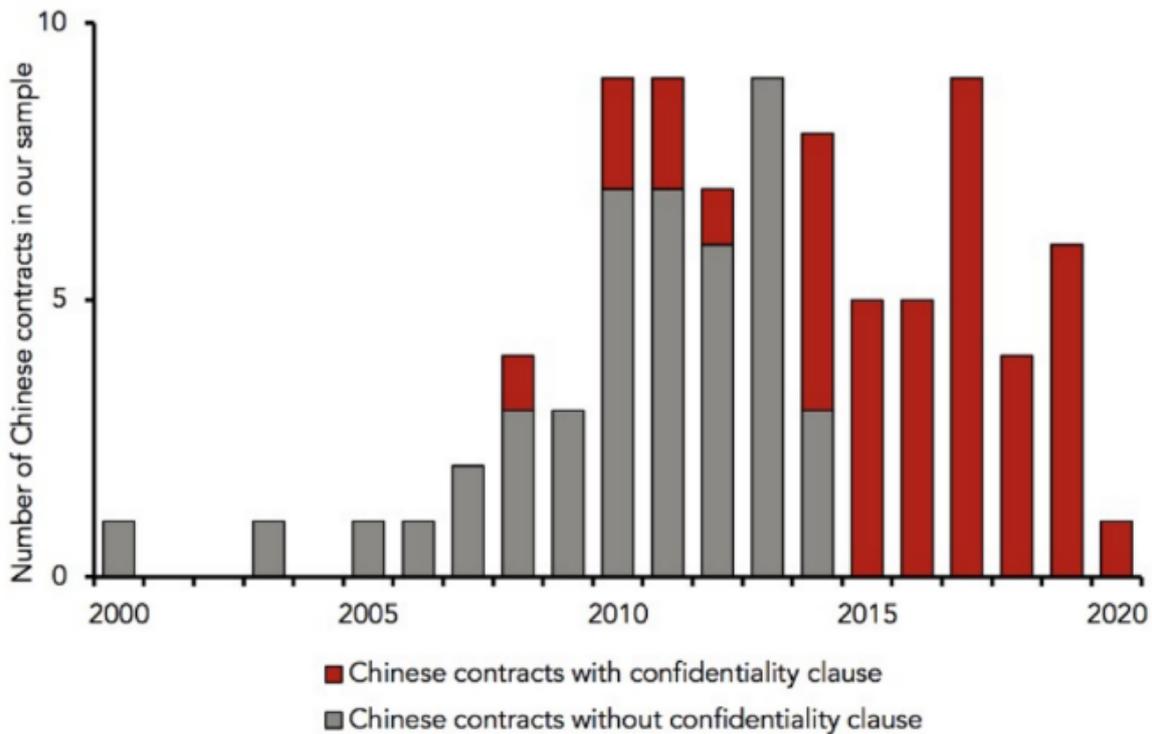
### v. Control variables

Economic control variables include trade data on African exports to, and imports from, China, which are retrieved from the UN Comtrade Database. This data is converted into US\$ billion for consistency and is used to calculate the African trade balances as the difference between exports and imports. We also use CARI data on Chinese FDI flows and stocks (in US\$ billion) in Africa. In similar form to that of our instrument, we compute an FDI-to-GDP ratio variable.

Furthermore, we retrieve African and Chinese GDP data from the WB World Development Indicators database. Information on African countries' primary and fiscal balances are collected from the Cross-Country Database for Fiscal Space (Kose et al., 2022).

Stone and Wang's (2023) dataset tracks visits made by the Chinese Presidents and Premiers around the world between 1998 and 2020. We use this information to construct a time dummy variable equal to 1 for the year of the official visit, and 0 otherwise. We implement a similar binary variable for FOCACs, occurring every three years since 2000. Finally, we use the Polity5 Project's democracy score (from -10 to 10) and classification (from autocracy to full democracy) to account for the type of political regime. For each African country, we compute the distance from the Chinese score. The greater the distance, the more different the political regimes. Moreover, a change in this distance reflects a potential change of administration or regimes. **Table B2** presents summary statistics for all the variables in our panel data.

#### IV. Use of confidentiality clauses in loan contracts



**Figure A3.** Use of confidentiality clauses in loan contracts.

Source: (Gelpern et al., 2021).

#### V. Descriptive statistics and data narrative: Control variables

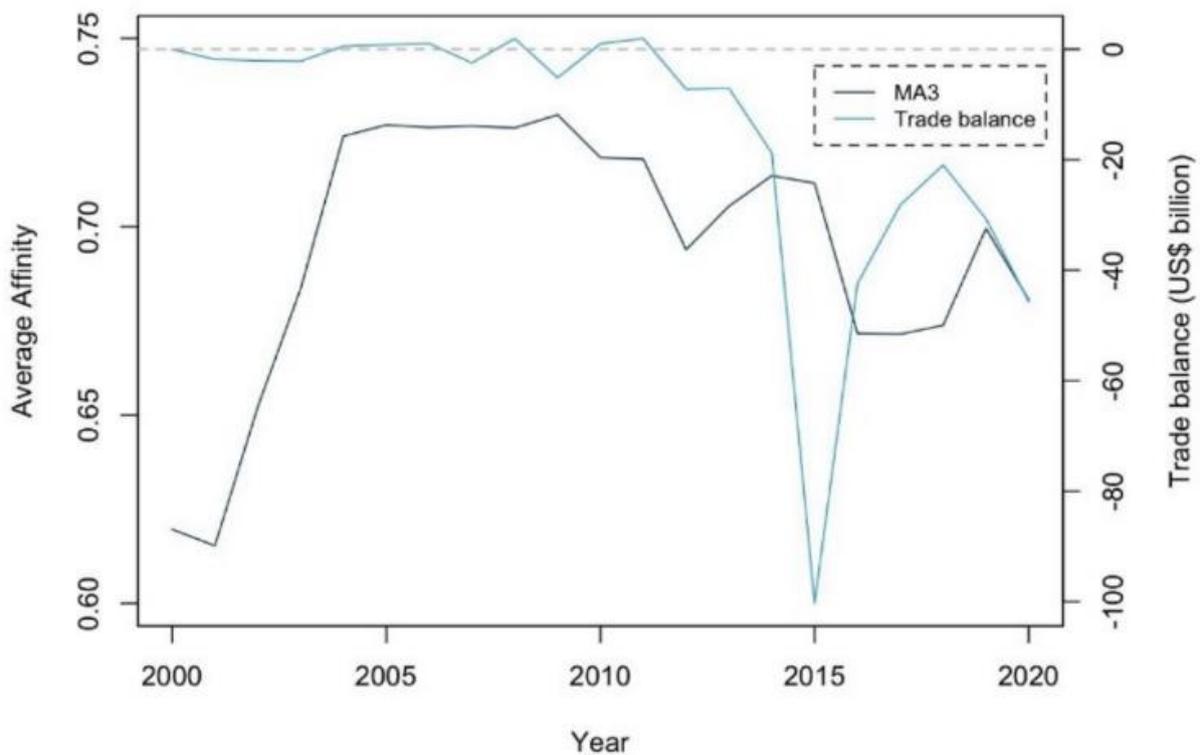
In order to complete this analytical part, we examine other important variables that can affect bilateral relations. First, we take a closer look at our economic control variables such as trade, FDI and Chinese GDP growth. We then focus on the political and diplomatic variables, which are the distance from the Chinese political regime score and the occurrences of official visits and FOCACs.

##### i. Trade, FDI and Chinese GDP growth

According to the literature, increasing trade has a positive effect on bilateral relations. Even more relevant for our study, Sokolova (2019) declares that “countries that trade together, vote together”. Although we support this general

consensus, we supplement it with our assumption stating that degrading trade balance is harmful for political alignment. As we saw in **Figure 1** Sino-African trade volume rapidly grew in the twenty-year period, but the trade balance was hit hard between 2014 and 2016. This substantial decline can be attributed to shocks to both commodity prices and exchange rates. Given that African countries mainly export oil and mineral resources to China and import in majority manufactured goods such as machinery, textile and electronics (Bociaga, 2023; Pinto, 2022), the oil and commodity prices drop of 2014–2016 drove African exports to China in nominal terms down. In addition, the Shanghai Stock Market turbulence of 2015 and the more general Chinese economic slow-down substantially depreciated the Renminbi (RMB) on the international foreign exchange market, which as a consequence entailed a surge in African imports from China.

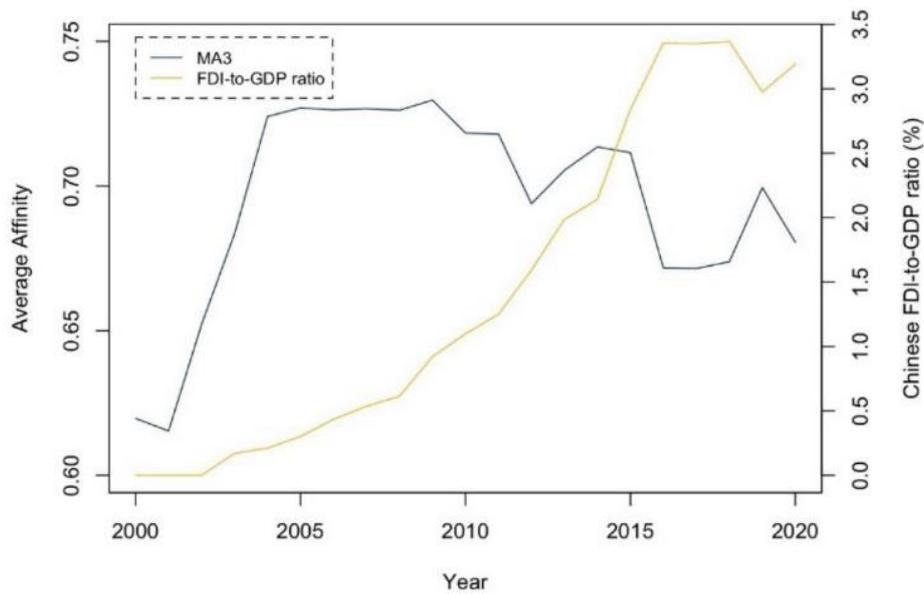
The conjunction of these two effects caused the widening of Africa’s trade deficit over these years. Now linking trade and voting affinity, **Figure A4** suggests that a declining trade balance correlates with a decline in affinity. Even though the MA3 version of our affinity curve moves the 2014–2016 affinity drop identified in Section 6.1 further to the right, we can assume without doubt that the increasing African trade deficit participated to it.



**Figure A4.** Africa’s trade balance with China and MA3 voting affinity (2000–2020).

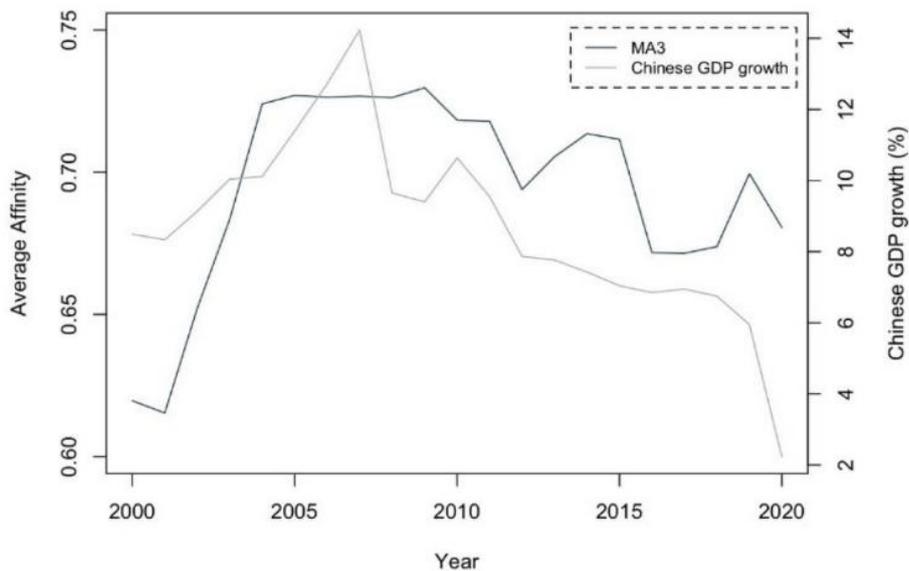
Concerning our FDI and Chinese GDP growth variables, the impact of the former on voting affinity does not seem graphically evident, whereas that of the latter is more visible. We hypothesized that FDI should have a positive effect on bilateral political alignment because, unlike loans, they consist of capital flows that contribute towards the economy of recipient countries.

**Figure A5** shows Chinese FDI-to-GDP ratios, which we use for consistency with our instrument, in relation to voting affinity, but it is hard to draw any insight from it.



**Figure A5.** Chinese FDI-to-GDP ratio and MA3 voting affinity (2000–2020).

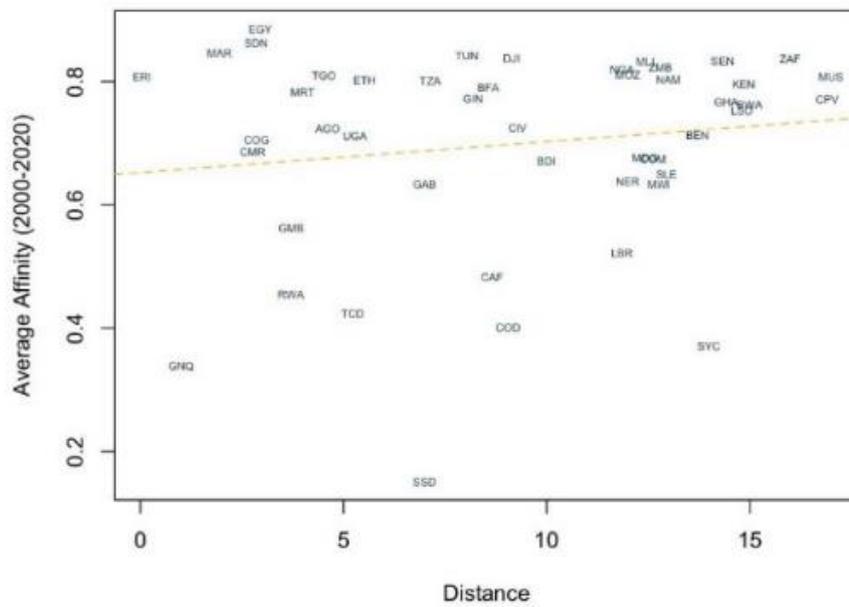
Otherwise, we assume that increasing China’s GDP growth, meaning better domestic performance and capability to project itself overseas economically, should correlate with increasing affinity. **Figure A6** shows that after peaking in 2007 around 14%, the PRC’s GDP growth appears to decline in a similar trend to that of the affinity score.



**Figure A6.** Chinese GDP growth rate (%) and MA3 voting affinity (2000–2020).

**ii. Political regime, official visits and FOCACs**

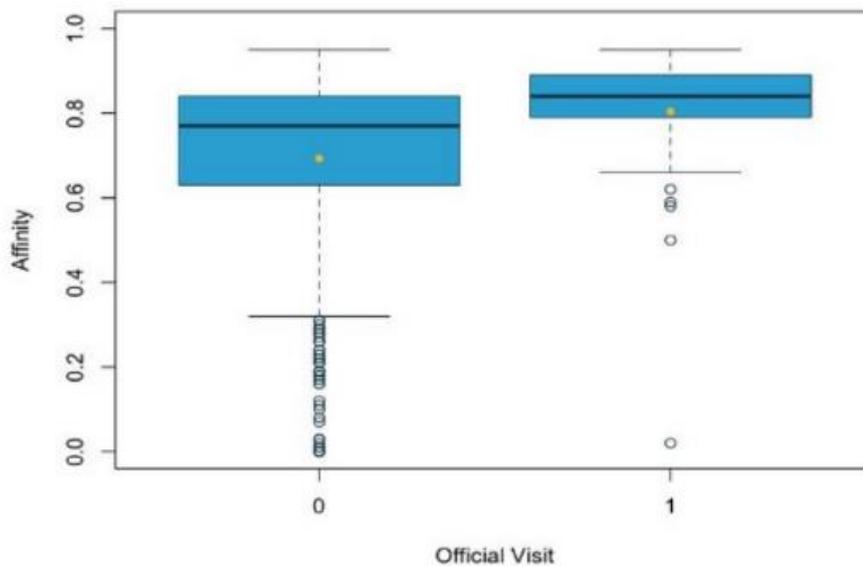
As for our political and diplomatic controls, we first expect that the greater the distance from the Chinese democracy score the lower the affinity for a given African country. If we focus on the static analysis, meaning comparing both the average democracy score distance and the average affinity score for each country in our sample over the whole period, **Figure A7** appears to contradict our assumption, as affinity increases in democracy score distance. Even though we lack statistical significance, this would imply that the more different the regimes, the higher the affinity. Nevertheless, this trend could be the result of pre-existing bilateral ties that are not covered by our study period.



**Figure A7.** Average distance from China’s democracy score and average voting affinity over our period of interest (2000–2020).

**Figure A7** does not show the effect of a change in the distance. The dynamic analysis, intended to capture the effect of such a change, reflecting a change of regime or administration, will be conducted in the following section.

For our binary variables relating to official visits and FOCACs, we assume that voting affinity increases during the year in which they take place, and the year following in the case of FOCACs. **Figure A8** shows that in years when a Chinese president or Premier visits a country, the affinity score is higher on average. Mean affinity for years without a visit is 0.69, whereas it is 0.8 for years with a visit.



**Figure A8.** Affinity according to official visit occurrence (0 or 1).

The distribution is also more concentrated around the median in the latter case. **Figure A9** presents a similar analysis for FOCACs but does not reveal any tangible trend. Mean affinity for the year and the year following the FOCAC is 0.71, which is slightly higher than for the opposite case standing at 0.69.

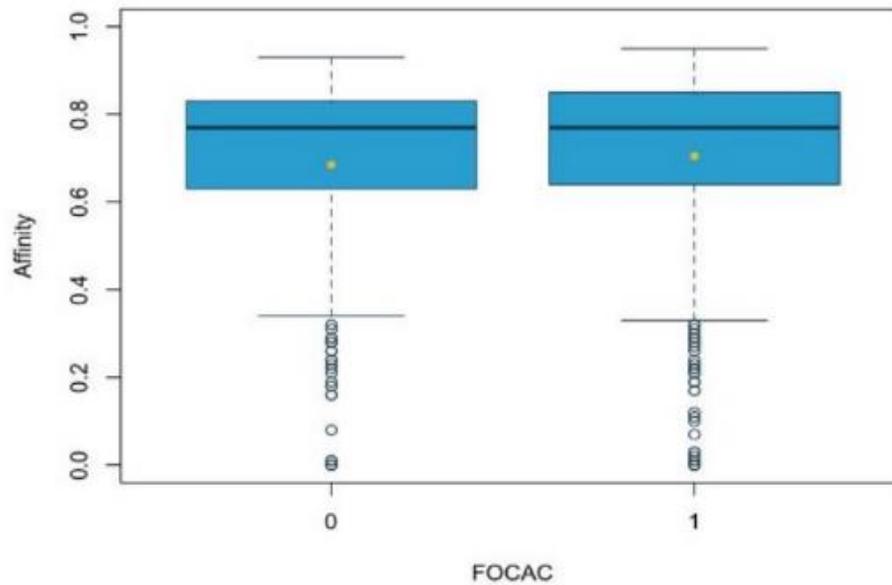


Figure A9. Affinity according to FOCAC occurrence (0 or 1).

## VI. Baseline model results

About the loan terms variables, an increase in the average interest rate negatively impacts voting alignment while an increase in combined maturities and grace periods entails higher affinity (see **Table B5** in Appendix B). While consistent with the main assumptions of our study, these results are not statistically significant. Interestingly, all the economic controls are in line with expectations and statistically robust at the 5% level. With a coefficient estimate between 0.003 and 0.004, an appreciation of the trade balance of one standard deviation (US\$ 3.5 billion) would result in an increase of 0.01 in average voting affinity. Similarly, an increase of one percentage point in FDI-to-GDP ratio or Chinese GDP growth rate would make voting alignment appreciate by approximately 0.01. However, it appears that the political control variables do not offer considerable explanatory power. While the signs of the estimates for the distance from the Chinese democracy score, official visits, and FOCACs are all in line with expectations when using our baseline voting affinity score as dependent variable, they are not statistically different at the 5% level.

## Notes

- <sup>1</sup> Data on UNGA voting for Algeria, Libya and Zimbabwe is incomplete. Data on Chinese loans for Eswatini, Guinea-Bissau, Sao Tome and Principe, and Somalia is not available. This makes a total of seven excluded countries.
- <sup>2</sup> We use the CLA database for collecting loans commitments in 2020 as the ADD does not provide information for that year.
- <sup>3</sup> The state-controlled feature of Chinese overseas financing allows us to consider all loans as PPG.
- <sup>4</sup> We use the sum of maturities and grace periods rather than treating them separately.

## Appendix B

**Table B1.** Voting affinity score.

African Country	China			
	Yes	No	Abstain	Absent
Yes	1	0	0	0
No	0	1	0	0
Abstain	0.5	0.5	1	0.5
Absent	0	0	0	1

**Table B2.** Summary statistics.

Variables	N	Unit	Mean	SD	Min	Max
VotingAffinity	987	Index	0.70	0.21	0.00	0.95
MA3	987	Index	0.70	0.19	0.00	0.94
Loan	987	US\$ billion	0.18	0.78	0.00	19.21
ODALoan	987	US\$ billion	0.07	0.20	0.00	1.73
CommercialLoan	987	US\$ billion	0.11	0.73	0.00	19.19
InterestRate	987	%	1.02	1.60	0.00	9.03
MaturityGrace	987	Years	9.75	12.06	0.00	36.00
DebtCancel	987	US\$ billion	0.00	0.01	0.00	0.21
DebtStocksTot	987	US\$ billion	6.60	11.79	0.00	102.05
DebtStocksChina	903	US\$ billion	0.67	1.99	0.00	22.92
DebtGDPTot	987	%	35.87	28.24	0.00	159.54
DebtGDPChina	903	%	2.57	4.87	0.00	42.17
Exports	987	US\$ billion	0.89	3.02	0.00	33.56
Imports	987	US\$ billion	1.21	2.89	0.00	47.83
TradeVolume	987	US\$ billion	2.10	4.73	0.00	48.75
TradeBalance	987	US\$ billion	-0.31	3.55	-46.92	29.52
FDIFlows	987	US\$ billion	0.04	0.19	0.00	4.81
FDIStocks	987	US\$ billion	0.35	0.82	0.00	7.47
FDIGDP	976	%	1.57	2.87	0.00	34.85
GDPGrowthChina	987	%	8.69	2.49	2.24	14.23
GDPAfr	987	US\$ billion	33.56	75.89	0.00	574.18
GDPGrowthAfr	987	%	4.04	5.52	-46.08	63.38
FiscalBalance	987	% of GDP	-2.46	5.62	-39.30	31.05
RegimeScore	987	Index	2.17	5.07	-7.00	10.00
DistanceRegime	987	Index	9.17	5.07	0.00	17.00
PresidentVisit	987	Dummy	0.03	0.17	0.00	1.00
PremierVisit	987	Dummy	0.02	0.13	0.00	1.00
OfficialVisit	987	Dummy	0.05	0.21	0.00	1.00
FOCAC	987	Dummy	0.33	0.47	0.00	1.00

**Table B3.** Average interest rates and maturities across creditors.

	Loans (\$b)	Interest Rate (%)	Maturities + Grace
China	178.07	3.12	22.31
Other Bilateral	78.31	1.39	33.17
Multilateral	379.03	0.93	36.22
Private	146.34	6.25	26.52

**Table B4.** Share of loan lontracts by lender and sector.

Lender	Share	Lender Type	Share	Sector	Share
EXIM	60 %	Policy Bank	73%	Transport	24%
CDB	13 %	Central Gov	14%	Power/Water	27%
MOFCOM	10 %	Commercial Bank	9%	ICT	12%
Other	17 %	Other	4%	Other	37%

**Table B5.** Baseline panel fixed-effects.

Dependent Variable	(1)	(2)
	Affinity Score	MA3
Loan	-0.0020 (0.0067)	-0.0015 (0.0048)
InterestRate	-0.0034 (0.0040)	-0.0029 (0.0029)
MaturityGrace	0.0005 (0.0005)	0.0004 (0.0004)
DebtCancel	0.1668 (0.3761)	0.1297 (0.2707)
TradeBalance	0.0040* (0.0020)	0.0031* (0.0014)
FDIGDP	0.0080*** (0.0021)	0.0076*** (0.0015)
GDPGrowthChina	0.0119*** (0.0021)	0.0097*** (0.0015)
sDistanceRegime	-0.0004 (0.0023)	0.0006 (0.0017)
OfficialVisit	0.0026 (0.0221)	0.0030 (0.0159)
FOCAC	0.0001 (0.0094)	-0.0054 (0.0067)
R-Squared	0.05	0.07
N	987	987

Standard errors in parentheses.

.  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

**Table B6.** Panel fixed-effects.

Dependent Variable	(1)
	<b>DebtGDP</b>
Loan	1.0412*** (0.1943)
InterestRate	0.2782* (0.1228)
MaturityGrace	-0.0325* (0.0149)
FiscalBalance	-0.1312*** (0.0304)
GDPGrowthAfr	-0.1150*** (0.0316)
R-Squared	0.10
N	903

Standard errors in parentheses.

.  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

**Table B7.** Reduced forms—Fixed-effects TSLS.

A. First Stage:		(1)		
		<b>Loan</b>		
DebtGDP			0.0389*** (0.0059)	
R-Squared			0.05	
N			903	
F-statistic: 43.39	p-value: 7.8079e-11			
B. Second Stage:		(1)	(2)	(3)
		<b>MA3</b>	<b>MA3</b>	<b>MA3</b>
LoanHat	-0.0509* (0.0239)		-0.0520* (0.0237)	-0.0644** (0.0211)
InterestRate	-0.0018 (0.0029)			-0.0015 (0.0030)
MaturityGrace	0.0002 (0.0004)			0.0003 (0.0004)
DebtCancel	0.1323 (0.2648)			0.3201 (0.2701)
TradeBalance	0.0032* (0.0014)		0.0031* (0.0014)	
FDIGDP	0.0081*** (0.0021)		0.0080*** (0.0021)	
GDPGrowthChina	0.0099*** (0.0016)		0.0101*** (0.0015)	
R-Squared	0.07		0.07	0.14
N	903		903	903

Standard errors in parentheses.

.  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

**Table B8.** Goodness-of-fit and model joint significance analysis RMSE, AIC, BIC and *F*-Test.

<b>Fixed-Effects TSLS specifications:</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
	<b>Main</b>	<b>Reduced form 1</b>	<b>Reduced form 2</b>	<b>Reduced form 3</b>
RMSE	0.09405	0.09414	0.09418	0.09715
AIC	-4249.27	-4253.43	-4258.64	-4202.68
BIC	-4201.21	-4219.79	-4239.42	-4183.45
<i>F</i> -Test <i>p</i> -value	1.2782e-10	9.4988e-12	2.1653e-13	0.015618

**Table B9.** High vs. low income samples.

<b>Sample:</b>	<b>HighR</b>	<b>LowR</b>
	<b>MA3</b>	<b>MA3</b>
DebtGDPChina	-0.0006 (0.0008)	-0.0053 . (0.0028)
InterestRate	-0.0038 (0.0027)	0.0017 (0.0056)
MaturityGrace	0.0003 (0.0003)	-0.0000 (0.0007)
DebtCancel	0.2124 (0.3700)	0.0994 (0.3822)
TradeBalance	0.0041*** (0.0009)	-0.0112 . (0.0060)
FDIGDP	0.0025 (0.0032)	0.0101** (0.0031)
GDPGrowthChina	0.0109*** (0.0015)	0.0085** (0.0030)
DistanceRegime	-0.0009 (0.0016)	0.0021 (0.0030)
OfficialVisit	0.0005 (0.0122)	0.0364 (0.0423)
FOCAC	-0.0026 (0.0065)	-0.0121 (0.0123)
<i>R</i> -Squared	0.23	0.10
<i>N</i>	441	462

Standard errors in parentheses.

.  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

**Table B10.** Top 10 debtors vs. top 10 ratios.

<b>Sample:</b>	<b>TopDebtors</b>	<b>TopRatios</b>
	<b>MA3</b>	<b>MA3</b>
DebtGDPChina	0.0026** (0.0009)	-0.0003 (0.0007)
InterestRate	-0.0045 (0.0027)	-0.0065* (0.0031)
MaturityGrace	0.0003 (0.0005)	0.0010* (0.0004)
DebtCancel	0.1034 (0.1790)	-0.0562 (0.1926)
TradeBalance	0.0037*** (0.0009)	0.0063*** (0.0013)
FDIGDP	-0.0091*** (0.0026)	0.0010 (0.0023)
GDPGrowthChina	0.0073*** (0.0019)	0.0108*** (0.0023)
DistanceRegime	0.0002 (0.0032)	0.0023 (0.0025)
OfficialVisit	-0.0037 (0.0116)	-0.0079 (0.0205)
FOCAC	0.0045 (0.0079)	-0.0029 (0.0085)
<i>R</i> -Squared	0.31	0.27
<i>N</i>	210	210

Standard errors in parentheses.

.  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .