Corruption, Chinese investment and trade: Evidence from Africa

Abstract

We investigate whether corruption in host countries drives the different routes of Chinese economic engagement with Africa. Using data on 49 African countries for 2000-2018, we find that corruption affects each route of China's engagement with Africa differently. Corruption in Africa is significantly negatively associated with FDI from China but significantly positive with both trade and construction. These relationships are moderated by the availability of natural resources but do not change after the implementation of the Xi Jinping anti-corruption campaign. By disaggregating China-Africa financial engagement into its different routes, we demonstrate that the relationship between corruption and China's presence in Africa varies with the nature of the engagement.

1   Introduction

Economic engagements between countries take place at different levels and via different routes. However, the mode of engagement is influenced by country-specific advantages such as the institutional environment and the availability of natural resources (Eissa and Elgammal, 2019; Grøgaard et al. 2019). The choice of one mode will be preferred over another if, subject to country-specific factors, the benefits outweigh the implicit costs. In this paper, we shed light on how one important attribute of the quality of institutions in African countries, corruption, is associated with different routes of engagements with one of the continent's major external partners, China.

We use data from a sample of 49 African countries between 2000-2018 to investigate how the level of corruption in these countries affects three important channels of economic engagements with China, namely; Foreign Direct Investment (FDI), Trade and Construction. The China-Africa relationship provides an interesting context because unlike investment and trade from other countries, which are mainly done by independent multinational companies, investments from China to Africa are mostly controlled by the state and central government of China due to the significant involvement of the central government in the activities of most multinational companies. Also, these investments involve large amounts of money, compared with most private projects (Gordon 2012). Such an approach, therefore, helps China to achieve a common objective by centrally controlling all investments to Africa (Meservey 2018). Figure 1 shows the yearly average value of the FDI, investment and construction between China and all African countries in our sample.

[Insert Figure 1 here]

Some studies have argued that because China is in Africa to consolidate its power as a global leader, it is likely to find countries with weak governance more attractive (Dreher et al. 2018, Isaksson and Kotsadam 2018). This is because China itself is perceived as a country with

a higher prevalence of corruption compared to other rich countries. According to Transparency International (2011), Chinese companies were ranked second amongst firms from 28 other countries that are likely to pay bribes abroad. More than 60% of Chinese firms in Africa surveyed admit to paying bribes in order to obtain a license (McKinsey and Company 2017).

However, in recent years, China has consistently presented itself as having strong anti-corruption strategies, including anti-foreign bribery laws that specifically ban bribery of foreign officials. Since coming to power in 2013, the current President, Xi Jinping, has stressed on eliminating the corrupt practices in the country. There is also growing evidence that these anti-corruption measures have reduced the corruption level of China in recent years compared with the 1990s and early 2000s (Taplin 2019).

We begin our analysis by first testing for the relationship between host country corruption in African countries and the value of Trade, FDI and Construction activities. We then investigate whether this relationship is moderated by the level of natural resources in these countries. Finally, we examine whether the period after the introduction of the anti-corruption campaign by the Xi Jinping administration alters the relationship between host country corruption and the three modes of economic engagements.

Our findings show that corruption affects each route of China-Africa economic engagement differently. Specifically, we find a negative and significant relationship between corruption and the flow of China's FDI in African countries. However, corruption is positively and significantly associated with trade and construction activities with China. In contrast, countries with low perceived corruption will benefit from a long-term flow of FDI from China. In further analysis, we observe that the positive relationship between corruption and trade is strong in natural resource-rich countries. However, corruption reduces construction contracts and increases the flow of FDI in natural resource-rich countries. Lastly, we do not find evidence of Xi Jinping's anti-corruption campaign to be changing the course of China-Africa engagements in relation to corruption, trade, and investment.

Our paper contributes to the literature in several ways. Firstly, we provide insights on why corruption may appear beneficial to some economic engagement strategies and detrimental to others (FDI). Our results show that the impact of corruption on international business is not straightforward as documented in most prior studies. However, the relationship significantly depends on whether the risk and cost of corruption can be accounted for at the entry level of the foreign operation. Secondly, unlike prior studies of host country corruption and inward FDI which mostly focus on FDI from different countries (Uhlenbruck et al. 2006, Wu 2006, Brada et al. 2019), our paper focuses on only Chinese investment in and trade with Africa. Although Buckley et al. (2007) examine determinants of Chinese FDI to different countries, they focus more broadly on capital market imperfections, ownership advantages and institutional factors. Different to their study, we focus more specifically on corruption, which is a major socio-economic bane in African markets and examine how it drives different routes of Chinese engagement including trade, FDI and construction, while addressing the issues of endogeneity in this relationship. Finally, by focusing on international business from a single country (China) to different countries, we show how a foreign investor adapts to different levels of corruption via different routes of international business. Our results signal to policymakers that, although countries with high levels of corruption may attract some form of investment from China, these may only be for the short term. Hence, having a robust partnership with China for long-term investment will require control of corruption.

The remainder of the paper is as follows. We discuss relevant literature and develop hypotheses to guide our empirical analyses in Section 2. In Section 3, we describe our data and set our empirical design. In Section 4, we discuss the findings of our analysis. We check for the robustness of our main findings in Section 5. Section 6 concludes.

2 Brief literature review

The presence of good quality institutions boosts the confidence of investors and mitigates any concerns they might have about dealing with host countries (Bannaga et al. 2013, Lucke and Eichler 2016, Shah et al. 2016; Battaglia et al., 2021). In this context, corruption, defined as the abuse of power for self-gain (Werlin 1994, World Bank 1994), is an essential indicator of the quality of a country's institutions as it reflects the strength of economic and legal institutions (Svensson 2005). As such, some previous studies find a significant relationship between corruption and external financial engagements in the form of trade or investment. High corruption, which undoubtedly increases the cost and risk of any business transactions, is likely to be a disincentive for foreign operations (De Jong & Bogmans, 2011; Djankov, Freund, & Pham, 2010; Habib & Zurawicki, 2002; Quazi, Vemuri, & Soliman, 2014; Wei, 2000; Zhao, Kim, & Du, 2003). However, when the need to serve a foreign market becomes unavoidable due to political or economic reasons, foreign businesses may aodopt different strategies which can use to mitigate the pontieal effect of corruption.

As a moderating factor in transactions and the access to resources in host country (Meyer 2001), corruption can facilitate or deter investment. It is a behavioural uncertainty which can result in subjective and irrational human behaviour (Williamson 2007). Consequently, prior studies find corruption to be both beneficial and detrimental to foreign operations of businesses. However, they do not adequately describe how it affects different entry modes. On the one hand, the uncertainty surrounding corruption increases transaction cost and risk, which leads to a reduction in FDI (Wei 2000, Habib and Zurawicki 2002, Zhao et al. 2003, Quazi et al. 2014). It involves the payment of bribes which is an additional cost in the relationship between foreign operators and local government (Cuervo-Cazurra 2016). For instance, Habib & Zurawicki (2002) find corruption in the host country as well as the absolute corruption difference between host and home country to negatively affect the flow of FDI. Corruption affects trade as the results of poor customs services and long waiting hours (De Jong

and Bogmans 2011), and lower levels of exports equally stemming from corruption at the border. (Djankov et al. 2010). On the other hand, corruption may act as a "helping hand" by providing quick and easy access to local resources, resulting in a positive impact on foreign operations (Egger and Winner 2005, Barbopoulos et al. 2014, Gossel 2018). It speeds up transactions and procedures, especially in excessive and misguided regulated environment, hence increasing competition in monopolistic markets (Lui 1985). Other studies have also reported insignificant relationships between corruption and the flow of foreign business (Henisz 2000, Wheeler and Mody 1992).

The rapidly growing economic presence of China in Africa provides a unique setting for us to gain some useful insights. Firstly, corruption, which is both a cost and risk to international business, is pervasive in Africa which is a continent characterized by low institutional quality compared to other developing regions (Agoba et al., 2020). Yet the continent remains one of the fastest-growing markets for foreign trade and investment (UNCTAD 2019). Secondly, the level of corruption in some African countries is significantly lower (e.g. Botswana and Guinea-Bissau) or higher (e.g. Angola and Chad) than that of China. However, China has successfully established engagement with all African countries using different economic strategies. Thirdly, China is racing for global dominance using state-controlled enterprises. This makes the presence of China in Africa less of a question of why but more of how it is using different channels of economic engagement to mitigate the risk and cost of corruption, a significant transaction cost.

Upon assuming office in 2013, China's President, Xi Jinping, launched an anti-corruption campaign that was aimed at reducing the high levels of corruption that had bedevilled the country over the years. The campaign, among others, has resulted in strengthening of the Central Commission on Discipline and Inspection (CCDI) and the investigation and arrest of public government officials who were hitherto considered untouchable (Chen and Kung 2019). However, in spite of the widespread support of this campaign, some scholars cast doubt on its

effectiveness. For example, it is mostly argued that the crackdown on corruption has largely been used as a tool to get rid of potential rivals, enforce loyalty and strengthen Xi Jinping's hold on power (Yuen 2014, Shirk 2018). To date, whether and to what extent the anti-corruption campaign has altered the nature of ' China's external engagement in the form of trade and investment remains largely unexplored as the impact has mostly focused on internal outcomes at both macro and firm levels (Gan and Xu 2019). Given that the campaign appears to assume more of a political dimension, we conjecture that the nature of China's external financial engagement with African countries will not be altered by the campaign, especially when it involves a continent where China is more likely to be the bigger gainer.

3   Methodology

3.1   Sample

Our sample is based on all member states of the African Union. Due to the unavailability of data, we exclude 6 out of the 55 countries that make up the union and are left with 49 countries. Our sample period spans 19 years from 2000 to 2018.

3.2   Measurement of variables

3.2.1   Dependent variables: Routes of China-Africa partnership

China engages in different activities with African countries, including foreign aid, export of workers. However, we focus on three business engagements, which cover the areas of investment and foreign trade. These are trade FDI, trade (Trade) and construction contracts (Construction). We measure FDI as the foreign direct investment flow from China. Trade is measured as the sum of each country's imports from and exports to China whilst Construction is measured as the construction revenue accruing to China from African countries. To control for the effect of country size, we scale each value by the GDP of the respective countries. We

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obtain data on China FDI, trade and construction from the China Africa Research Initiative (2020) at Johns Hopkins University.[1]

3.2.2 Independent variable: Corruption (CPI; BCI; CCPT)

We measure corruption from three different sources to ensure the robustness of our results. In addition to these three measures capturing slightly different levels of corruption in a country, they help in overcoming the limitation of our results being bias due to the measurement of corruption. The first measure is the Corruption Perception Index (CPI) by Transparency International.[2] The CPI is calculated from 10 different data sources and institutions. It is based on the perceptions of business people and experts on the level of corruption in the country. Lee and Ng (2009) argue that the CPI by Transparency International captures many of the essential conceptual socio-economic constructs that are correlated with other national polls, despite being a subjective view of experts. CPI ranges from 0 to 100, with higher values indicating low perceived corruption (Transparency International, 2020). For ease of interpretation, we use the inverse value of the CPI score such that higher values indicate high perceived corruption in the country. Our use of CPI is consistent with studies such as Egger and Winner (2005), Habib and Zurawicki (2002), and Jain et al. (2017). The second measure of corruption is the Bayesian Corruption Index (BCI) from the Quality of Government Institute.[3] Similar to CPI, BCI ranges from 0-100 but with higher values indicating higher corruption. BCI is based on the opinions of companies, non-governmental organizations, and officials on the level of corruption in a country. Information for computing the index is collected from 20 different surveys. Our use of BCI is consistent with Cuadrado-Ballesteros et al. (2019). Thirdly, following Barbopoulos et al. (2014) and Egger and Winner (2005), we also use Control of Corruption (CCPT) by

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[1] China Africa Research Initiative (2020). Data: China-Africa Trade. http://www.sais-cari.org/data-china-africa-trade

[2] Transparency International https://www.transparency.org/en/cpi

[3] Quality of Government Institute https://www.gu.se/en/quality-government/qog-data/data-downloads.

Kaufmann and Kraay (2018) as a measure of corruption. CCPT represents the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption (Kaufmann and Kraay 2018). CCPT is part of the six governance indicators based on 30 different sources and ranges from -2.5 to 2.5 with higher values indicating less corruption. However, we use the reciprocal format, which rescales the index to range between 0-5 with 0 being the lowest level of corruption and 5 being the highest.

3.2.3 Control variables

We control for a battery of both economic and political factors that can drive the flow of foreign FDI, Trade and Construction, consistent with previous studies. Specifically, we include GDP per capita, GDP growth, population size, political stability and the effect of the financial crisis. Appendix 1 provides a detailed definition of these variables.

3.3 Empirical model and estimation technique.

To examine the impact of corruption on the different routes of China-Africa economic engagements, we develop our empirical model as follows:

$$Y_{it} = \alpha_i + \beta_j \text{corruption}_{ijt} + X'_{it}\theta + \varepsilon_{ijt} \qquad i = 1, \dots, N \; ; = 1, \dots, T \; ; j = 1, \dots, J \qquad (1)$$

where Y_{it} and X'_{it} are the China economic relation with Africa (measured using three proxies: FDI, Trade and Construction) and vector of control variables (all defined in Appendix 1), respectively, for country i and time t. Corruption_{ijt} is the corruption indicator j of country i at time t and and ε_{ijt} is the associated error term. Since we use three different dependent variables, i.e FDI, Trade and Construction, to analyse the economic relation of China with Africa, we estimate the empirical model, equation (1), for these variables separately. Also, we use three different proxies for the measure of corruption: corruption and, therefore, estimate models for each of the three dependent variables using three the different proxies of corruption.

Our empirical model has a dynamic panel feature in that we include a lagged dependent variable in each estimation. Thus, the related estimation could potentially suffer from

endogeneity problems. We therefore use the System GMM (Arellano and Bover 1995, Blundell and Bond 1998). We rewrite our empirical model, equation (1) to estimate a System GMM regression as follows:

$$\Delta Y_{it} = \Delta\beta_j \text{corruption}_{ijt} + \Delta X'_{it}\theta + \Delta\varepsilon_{ijt} \qquad (2)$$

$$Y_{it} = \alpha_i + \beta_j \text{corruption}_{ijt} + X'_{it}\theta + \varepsilon_{ijt} \qquad (3)$$

4   Results and discussion

4.1   Summary statistics

Table 1 shows the summary statistics of the variables used in the analysis. The average value of all the three measures of corruption are (69.288%, 56.115%, and 3.104 respectively for CPI, BCI, and CCPT) is above the mid-range score, indicating the high prevalence of corruption in Africa. This is also reflected in the high maximum values of the three measurements of corruption. However, the high standard deviation and low minimum values show a considerable variation among the sample countries in terms of corruption. The average value for dependent variables shows that trade ($1894.212 million) is the largest route of China's financial partnership with African countries, whilst FDI is lowest ($48.688 million). The mean value of construction revenue of $501.75 million, which is higher than the FDI, shows that China receives more money from Africa than what they invest.

4.2   Regression results

4.2.1   Corruption, Chinese trade, FDI and construction

The results of the two-step System GMM estimations are presented in Table 2. Columns 1-3 contain the results on FDI; columns 4-6 are that of Trade and columns 7-9 report results on Construction. Our primary variable of interest is Corruption, measured as either CPI (corruption perception index from Transparency International), BCI (Bayesian corruption index from Quality of Government dataset), and CCPT (the control of corruption indicator by Kafumaan and Kraay (2018)).

The results in columns 1-3 show that corruption has a negative and significant impact on China's FDI flow to Africa. This implies that corruption deters China from direct investment in African countries. We interpret this finding to mean that because FDI is a long-term financial commitment, Chinese investors prefer a country with a stronger regulatory environment, such as low corruption, to protect their investment. In addition to requiring large amounts of investment, FDI does not guarantee a specific outcome at any date. Therefore, China is cautious in investing in corrupt countries to avoid unenforceable contracts when things go wrong in the future. The results support the argument that in the long-run, an increase in high corruption is risky and costly to manage (Habib and Zurawicki 2002).

The results in columns 4 to 6 show that there is a positive and significant relationship between corruption and trade. This implies that African countries with higher levels of corruption attract more trade from China in the form of export or import of goods and services. The result is consistent across all three measurements of corruption. Exports and imports of goods and services involve different bureaucratic checks and balances, including customs clearance. Hence, corruption could serve as a way of circumventing the rather long and slow bureaucracies of most African countries (Méon and Weill 2010). The results related to trade is in a sharp contrast to that of FDI, suggesting that China is willing to trade with countries in Africa that experience high level of corruption but may not be willing to engage in investment. This is supports the argument that when transaction cost, in the form of increased corruption, rises, Chinese firms prefer to enter African market through trade rather than through undertaking FDI. Accordingly, the results demonstrate that higher corruption in Africa is associated with more trade and less FDI from China to Africa.

In columns 7 to 9, we present the results of the impact of corruption on China construction contracts in Africa. Contrary to the results on FDI and similar to those of trade, we find a positive and significant relationship between construction contracts and corruption. This implies that China secures more construction contracts in countries with high-level corruption.

This is consistent with the greasing the wheel hypothesis that corruption can be helping hand for foreign contractors. According to "greasing the wheel" or "helping hand" argument, corruption speeds up the bureaucratic processes and increases the probability of gaining access to government-funded projects (Tanzi and Davoodi 2001). China's construction works in Africa are mostly government-funded projects which are offered through the bureaucratic system and politicians (Burke 2007). Therefore, it is unsurprising to find that China engages in more construction with countries perceived to be corrupt. Further, with public-funded projects, it is maybe easier for contractors to include the cost of corruption into the overall consideration of the contract (Lehne et al. 2018). Thus, the revenue from the construction outweighs the costs of paying bribes to corrupt officials (Egger and Winner 2005). Moreover, unlike FDI, construction contracts guarantee a certain amount of revenue from the onset, which makes it easier to mitigate the risk and cost of corruption.

The post-estimation tests on the System GMM model, as reported by the Arellano Bond AR2, as well as the Hansen test, show the validity of the model and the instruments. In sum, the result in Table 2 validates our argument that different level of corruption attracts different routes of China's engagement in Africa differently.

[Insert Table 2 here]

4.2.2   Accounting for the effect of natural resources
Prior studies suggest that China is in Africa to extract natural resources such as oil and gas to fuel its rapid industrialization (Kolstad and Wiig 2012, Mourao 2018). Hence, having a natural resource is likely to override the effect of corruption on any foreign investment and trade in Africa. In this section, we examine whether the existence of natural resources influences how China engages with African countries, given the level of corruption in the country. To do this, we introduce two additional variables into the model. Resources rent, which is proxy for the amount of total resources rent as a percentage of GDP, collected from WDI. We also include a

moderation variable, which is a two-way interaction term between corruption and resource rent (*Resource*Corruption*). Accordingly, we modify our baseline empirical model as follows:

$$Y_{it} = \alpha_i + \beta_j \text{corruption}_{ijt} + \delta_1 \text{resource}_{it} + \delta_{2j} \text{corruption}_{ijt} * \text{resource}_{it} + X'_{it}\theta + \varepsilon_{ijt} \quad (4)$$

If the existence of natural resources influences the relationship between corruption and China's financial engagement in Africa, then we expect the coefficient of the interaction variable *Resource*Corruption* to be significant.

The results on FDI, reported in columns 1 to 3 of Table 3, reveal an interesting finding. The positive and significant effect of *Resource*Corruption* shows that the existence of natural resources overrides the cost of corruption on FDI inflow after the threshold level of total natural resources rent is reached.[4] Hence China invests in resource-rich countries with high perceived corruption. This is contrary to our baseline findings, where we find a negative relationship between corruption and FDI. This is because FDI in resource-rich countries is largely in the extraction of resources. Hence, paying bribes is a faster way to secure license and gaining access to the natural resource deposit than following long bureaucratic processes which are mostly met with resistance from the locals. In other words, corruption in resource-rich countries is a helping hand for securing licenses and gaining access to natural resources. The finding shows that, after threshold level of natural resources rent is reached, the transaction cost due to increased corruption is outweighed by the benefit of undertaking investment in the form of FDI and hence increasing Chinese investment in Africa.

The results, which are presented in columns 4 to 6 of Table 3, show that the interaction term (i.e., resource rent * corruption) significantly and positively affects trade under all the corruption measures. This implies that the impact of corruption on trade with China is more

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[4] The threshold level of total natural resources rents (% of GDP) can be found by partially differentiating FDI inflow with respect to each corruption indicator in Equation (4), and solving for the total natural resource rent by equating the partial derivative to zero. This approach can be applied to the other measures of economic engagement.

pronounced in resource-rich countries. Arguably, most trade with Africa involve the export of raw natural resources. And the extraction of these natural resources involves dealing with government officials and politicians. Therefore, it is intuitive to find a strong relationship between trade and corruption in resource-rich countries.

In columns 7-9, we present the results on construction contracts. We find that the effect of the interaction term is significant but negative which is opposite to that of the coefficient of the corruption variable. This indicates that corruption is a deterrent to Chinese construction in resource-rich countries after a threshold level of natural resources rent is reached. In other words, corruption enhances Chinese construction in Africa if natural resource rent is less than the threshold level. However, corruption reduces Chinese construction in Africa if natural resource rent is above the threshold level. One probable reason is that natural resources are often offered as consideration for construction contracts in resource-rich countries. For example, Ghana has pledged its Bauxite to China for the construction of major infrastructures such as roads and railways. The contract involves China's access to the Bauxite deposit for many years (CNBC 2019). The pledge of natural resources takes a long time to manifest, which makes the payment for the construction to take place sometime after completion of the projects. Hence, it will be prudent for China to mitigate all future risk, including corruption to avoid unenforceable contracts, especially where there is likely change in government during the extraction of natural resources.

[Insert Table 3 here]

4.2.3   The effect of Xi Jinping anti-corruption campaign

In this section, we test if these anti-corruption campaigns have reflected in the different routes of China-African financial engagement. We capture 2013 and subsequent years as 1, representing the anti-corruption period and years before 2013 as 0. We denote this variable as *Xi*. Next, we interact *Xi* with corruption to generate the moderating variable *Xi*Corruption*. Hence, we estimate the empirical model, in equation (1), by including *Xi* and its interaction

term with corruption as additional explanatory variables. We expect the *Xi*Corruption* variable to be negative and significant if the anti-corruption campaign has reflected in China dealings with Africa.

The results are presented in Table 4. The coefficient of *Xi*Corruption* though significant in all the routes, have the same sign as the main variable, corruption. These results indicate that the anti-corruption campaign has not changed the course of China's investment and trade in relation to corruption in Africa. Thus, our main result in Table 2 still holds after accounting for Xi Jinping's anti-corruption campaign.

[Insert Table 4 here]

5   Robustness tests

5.1. Instrumental Variable (IV) estimation approach.

In this section, we undertake a sensitivity analysis using IV estimation, to address potential endogeneity arising from reverse causality from economic interaction of China with Africa to corruption. Previous studies show that the quality of institutions of a country is an outcome of historical institutional factors such as diseases endowment, ethnic fractionalization, religion and legal origin (La Porta et al. 1999, Acemoglu et al. 2001, Alesina et al. 2003, McCleary and Barro 2006, La Porta et al. 2008, Arruñada 2010). Therefore, we instrument corruption, which is one of the indicators of institutional quality of a country, by historical institutional factors.

Table 5 summarizes the IV regression of the effect of corruption measured in terms of CPI, BCI, and CCPT on economic interaction of China with Africa measured in terms of FDI, Trade, and Construction. Columns 1 to 3 demonstrate that corruption, for all the three measures, negatively and significantly impacts FDI flow from China to Africa. Columns 4 to 6 show that corruption enhances Chinese trade with Africa under all the three proxies of corruption. The last three columns of the Table show that corruption raises Chinese construction in Africa. The

results for FDI inflow, trade and construction are consistent with our main findings. The post-estimation tests show that our model is well specified.

[Insert Table 5 here]

5.2. Accounting for corruption in China

In this section, we address a potential for endogeneity arising from omitted variable bias. There is a possibility for endogeneity arising from not controlling for a change in corruption in China. Endogeneity in this case arises if change in corruption in China is related to both our main independent variable, corruption in Africa, and the dependent variables which are the economic interactions of China with Africa, namely FDI, Trade and Construction. We, thus, account for changes in the level of corruption in China as well as the difference in the level of corruption of China and each of the countries in our sample. In untabulated results, corruption continues to be significant and the coefficients maintain their signs, similar to our main results in all cases.

6   Conclusion

As an integral part of a country's institutional environment, corruption is an important determinant of the flow of foreign trade and investment (Harms and Ursprung 2002, Egger and Winner 2005). However, existing literature has not explicitly examined how corruption affects the different routes of international business from a single country to Africa. Our study addresses this gap in the literature by examining how corruption influences China's investment and trade in Africa. We employ a two-step System-GMM on a panel dataset of 49 African countries over 19 years. Our results are, however, also robust to IV regressions which address other kinds of endogeneity in this relationship.

We find corruption to be an impediment to the flow of China's FDI to Africa. In contrast, corruption is positively and significantly associated with trade and construction contracts with China. However, in further analyses, we find that natural resources rent has a moderating effect on the impact of corruption on economic engagement of China with Africa. Specifically, the

negative effect of corruption on FDI turns to be positive while the positive effect of corruption on construction changes to negative after the respective threshold level of natural resources rent, for the models of FDI and construction, is reached. However, China's trade with Africa is more pronounced in resource rich countries. Regarding the anti-corruption campaign by Xi Jinping since 2013, our results indicate that this campaign is yet to drive any significant change of direction to the effect of corruption on China-Africa financial engagements.

Our results imply that China uses different routes to engage with African counties depending on the level of perceived corruption in the country. Given that corruption retards FDI, which is a long-term commitment, our results are consistent with McKinsey reports that show that African countries that have a robust and long-term partnership with China appear to have low perceived corruption (McKinsey & Company 2017). Notwithstanding the positive association between corruption and trade, our paper does not intend to make a case for promoting corruption in order to attract more trade from China. On the contrary, given that FDI represents an inflow to African countries, compared to trade and construction, which instead accrue more revenue to China, we argue that it will be in the best interest of African countries to strengthen the fight against corruption to enable a robust and long-term partnership that yields better benefits to the host countries.

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Figure 1: China trade, Outward FDI and Construction in Africa (USD million)
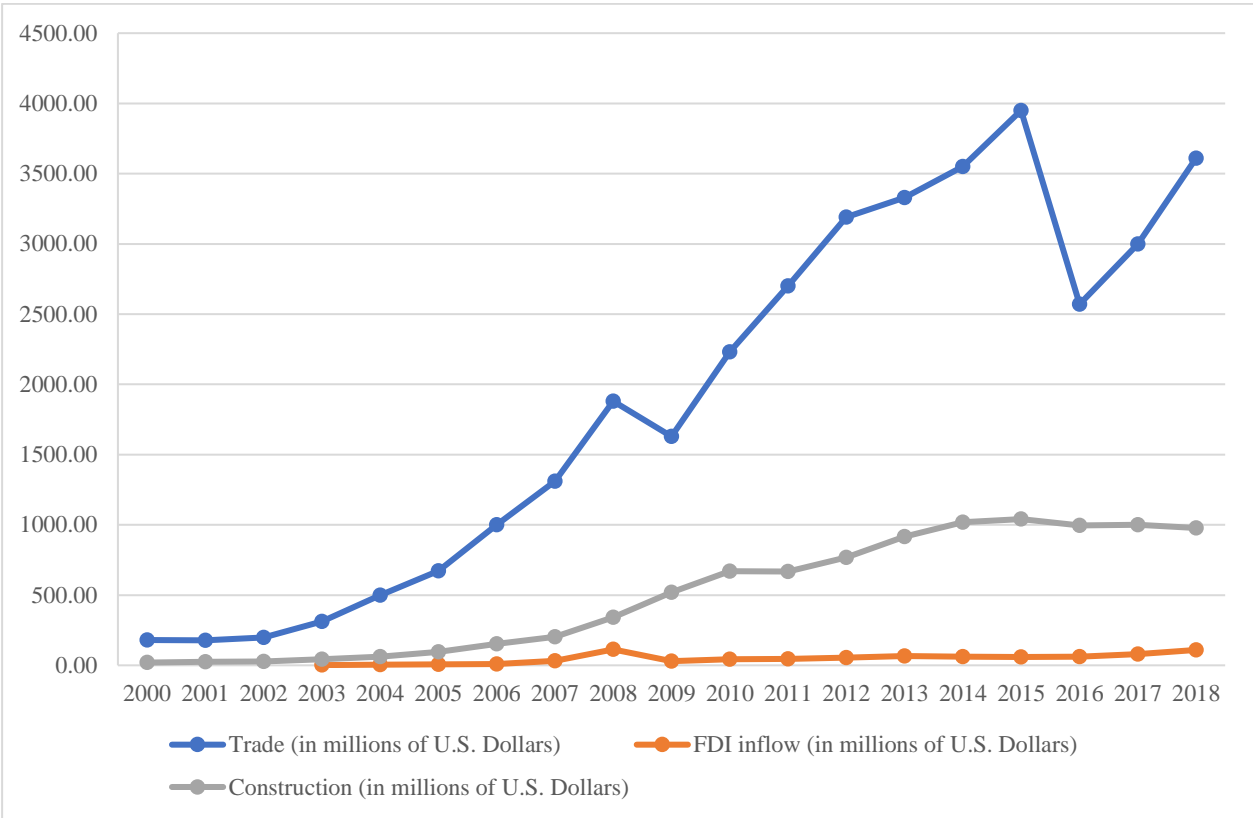
Source: China Africa Research Initiative (2020)

Table 1: Summary statistics

	Mean	S.D.	Min	Max
CPI (0-100)	69.288	10.572	30	90
BCI (0-100)	56.115	10.607	22.872	74.963
CCPT (0-5)	3.104	0.594	1.283	4.326
FDI ($ Million)	48.688	201.222	-814.91	4807.86
Trade ($ Million)	1894.212	4513.641	0.294	48752.15
Construction ($ Million)	501.725	1137.181	0	8434.21
GDP per capita ($)	2233.189	3139.981	111.927	22942.58
GDP growth	4.703	7.457	-62.076	123.14
Population (log)	15.854	1.539	11.304	19.093
Inflation	101.58	42.197	2.909	382.501
GFC	0.105	0.307	0.000	1.000
Political Stability	-0.496	0.838	-2.699	1.282

Table 2: Corruption, Chinese trade, FDI and construction

Two-step system GMM estimation results of the impact of corruption in African countries on FDI (1-3), Trade (4-6) and Construction (7-9) from China. All variables are defined in Appendix 1. Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

VARIABLES	FDI			Trade			Construction		
	(1)	(2)	(3)	(4)	(5)	(3)	(7)	(8)	(9)
	CPI	BCI	CCPT	CPI	BCI	CCPT	CPI	BCI	CCPT
Corruption	-0.000115***	-1.69e-05***	-0.00129***	0.000548***	0.000147***	0.00807***	7.47e-05***	0.000127***	0.00384***
	(1.85e-06)	(2.79e-06)	(3.98e-05)	(1.83e-05)	(3.92e-05)	(0.000524)	(1.10e-05)	(1.78e-05)	(0.000248)
Lag. dep variable	0.238***	0.246***	0.247***	0.910***	0.908***	0.908***	0.778***	0.783***	0.772***
	(0.000420)	(0.000727)	(0.000441)	(0.000166)	(0.000187)	(0.000283)	(0.00240)	(0.00202)	(0.00285)
GDP per capita	-0.000171***	-7.35e-05***	2.69e-06	-0.00226***	-0.00388***	-0.00296***	-0.000108	-2.22e-07	-0.000109
	(4.38e-05)	(2.37e-05)	(2.09e-06)	(0.000349)	(0.000224)	(0.000344)	(0.000271)	(0.000201)	(0.000224)
GDP growth	1.96e-05***	9.37e-06***	1.71e-05***	0.000549***	0.000675***	0.000563***	0.000110***	9.29e-05***	0.000104***
	(3.00e-06)	(9.03e-07)	(2.21e-06)	(2.69e-05)	(1.51e-05)	(2.31e-05)	(9.07e-06)	(1.13e-05)	(1.10e-05)
Population (Log)	-0.000762***	-0.000521***	-0.000764***	-0.00247***	-0.00254***	-0.00221***	-0.000533***	-0.000780***	-0.000507***
	(1.25e-05)	(1.24e-05)	(1.27e-05)	(0.000258)	(0.000345)	(0.000265)	(0.000169)	(0.000179)	(0.000107)
Inflation	2.35e-05***	2.49e-05***	2.66e-05***	5.05e-05***	1.35e-05***	3.01e-05***	4.63e-05***	5.64e-05***	4.26e-05***
	(6.32e-07)	(4.49e-07)	(2.72e-07)	(5.50e-06)	(3.37e-06)	(3.87e-06)	(4.21e-06)	(4.02e-06)	(3.82e-06)
GFC	-0.000207***	-0.000287***	-0.000386***	-0.000845***	0.000199*	-0.000125	0.00324***	0.00348***	0.00311***
	(2.49e-05)	(1.22e-05)	(1.45e-05)	(0.000170)	(0.000106)	(0.000141)	(0.000247)	(0.000290)	(0.000319)
Political stability	-0.00135***	-0.000579***	-0.00116***	0.00272***	-0.000269	0.00208***	0.000304	0.000243	0.00149***
	(4.10e-05)	(3.29e-05)	(2.61e-05)	(0.000302)	(0.000485)	(0.000260)	(0.000280)	(0.000300)	(0.000262)
Constant	0.0201***	0.00862***	0.0145***	0.0258***	0.0711***	0.0416***	0.00446	0.00478	-0.00156
	(0.000569)	(0.000371)	(0.000358)	(0.00373)	(0.00497)	(0.00483)	(0.00379)	(0.00371)	(0.00206)
AR1.(PV)	0.035	0.065	0.036	0.018	0.020	0.018	0.001	0.001	0.001
AR2.(PV)	0.976	0.742	0.929	0.356	0.352	0.355	0.134	0.136	0.133
Hansen test	0.330	0.178	0.300	0.732	0.565	0.771	0.713	0.515	0.786
Observations	869	820	869	869	820	869	869	820	869
Number of id	49	49	49	49	49	49	49	49	49

Table 3: Accounting for natural resources

Two-step system GMM estimation results of the moderating role of natural resources on the impact of corruption in African countries on FDI (1-3), Trade (4-6) and Construction (7-9) from China. All variables are defined in Appendix 1. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

	FDI			Trade			Construction		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	CPI	BCI	CCPT	CPI	BCI	CCPT	CPI	BCI	CCPT
Corruption	-4.67e-05***	-7.99e-06*	-0.000636***	6.90e-05	0.000293***	0.00514***	0.000162***	0.000149***	0.00462***
	(5.06e-06)	(4.26e-06)	(7.80e-05)	(6.06e-05)	(4.12e-05)	(0.000962)	(1.22e-05)	(1.70e-05)	(0.000160)
Lag. dep variable	0.231***	0.226***	0.232***	0.913***	0.921***	0.898***	0.779***	0.779***	0.774***
	(0.000814)	(0.000860)	(0.000818)	(0.000308)	(0.000234)	(0.000217)	(0.00155)	(0.00274)	(0.00208)
Resource Rent	0.000220***	0.00137***	-0.000196***	-0.0215***	-0.0276***	-0.00592***	0.00336***	0.00373***	0.00240***
	(6.65e-05)	(7.15e-05)	(2.71e-05)	(0.000295)	(0.000266)	(0.000280)	(0.000243)	(0.000208)	(0.000255)
Res. rent*Corruption	-1.27e-06	-2.00e-05***	-0.000101***	0.000311***	0.000455***	0.00207***	-4.48e-05***	-5.81e-05***	-0.000697***
	(8.78e-07)	(1.12e-06)	(7.19e-06)	(4.03e-06)	(3.91e-06)	(8.85e-05)	(3.27e-06)	(3.23e-06)	(7.80e-05)
GDP per capita	-8.21e-05*	-5.03e-05**	1.39e-07	-0.00208***	-0.00196***	-0.00262***	2.87e-05	0.000159	-6.89e-05
	(4.54e-05)	(2.32e-05)	(4.39e-05)	(0.000226)	(0.000441)	(0.000303)	(0.000229)	(0.000292)	(0.000239)
GDP growth	8.44e-06***	5.48e-06***	3.81e-06**	0.000679***	0.000614***	0.000658***	8.88e-05***	0.000102***	8.67e-05***
	(2.67e-06)	(1.88e-06)	(1.85e-06)	(3.29e-05)	(2.50e-05)	(3.96e-05)	(1.50e-05)	(1.72e-05)	(8.99e-06)
Population (Log)	-0.000555***	-0.000646***	-0.000533***	-0.00171***	-0.00112***	-0.00267***	-0.000953***	-0.00102***	-0.000816***
	(1.47e-05)	(2.70e-05)	(1.35e-05)	(0.000347)	(0.000365)	(0.000267)	(0.000189)	(0.000184)	(0.000153)
Inflation	2.10e-05***	2.29e-05***	2.31e-05***	2.71e-05***	4.01e-06	1.04e-05**	5.89e-05***	5.48e-05***	5.55e-05***
	(7.66e-07)	(7.55e-07)	(4.92e-07)	(4.86e-06)	(4.09e-06)	(4.91e-06)	(5.80e-06)	(5.62e-06)	(4.75e-06)
GFC	-0.000231***	-0.000371***	-0.000300***	-0.000723***	0.00162***	0.000455**	0.00311***	0.00297***	0.00303***
	(2.18e-05)	(3.78e-05)	(1.73e-05)	(0.000249)	(0.000209)	(0.000178)	(0.000333)	(0.000275)	(0.000392)
Political stability	-0.000841***	-0.000850***	-0.000708***	0.00415***	0.00377***	0.00291***	-4.43e-05	-0.000533	0.000989***
	(3.31e-05)	(3.50e-05)	(2.04e-05)	(0.000400)	(0.000429)	(0.000483)	(0.000287)	(0.000383)	(0.000285)
Constant	0.0115***	0.00959***	0.00910***	0.0469***	0.0612***	0.0564***	0.00252	0.00548	-0.000925
	(0.000614)	(0.000413)	(0.000504)	(0.00863)	(0.00822)	(0.00530)	(0.00399)	(0.00420)	(0.00330)
AR1. (PV)	0.064	0.065	0.065	0.020	0.018	0.022	0.000	0.000	0.000
AR2.(PV)	0.796	0.811	0.789	0.368	0.359	0.359	0.131	0.135	0.128
Hansen test	0.363	0.377	0.314	0.702	0.562	0.689	0.586	0.553	0.526
Observations	820	820	820	820	820	820	820	820	820
Number of id	49	49	49	49	49	49	49	49	49

Table 4: The effect of Xi Jinping anti-corruption campaign

Two-step system GMM estimation results of the period post the Jinping anti-corruption campaign has influenced the impact of corruption in African countries on FDI (1-3), Trade (4-6) and Construction (7-9) from China. All variables are defined in Appendix 1. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

	FDI			Trade			Construction		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	CPI	BCI	CCPT	CPI	BCI	CCPT	CPI	BCI	CCPT
Corruption	-5.51e-05***	-2.24e-05***	-0.000560***	0.000369***	7.95e-05	0.00613***	4.82e-05***	0.000104***	0.00338***
	(2.29e-06)	(2.75e-06)	(4.56e-05)	(1.30e-05)	(6.00e-05)	(0.000711)	(1.40e-05)	(1.95e-05)	(0.000296)
Lag. dep variable	0.226***	0.234***	0.232***	0.915***	0.913***	0.914***	0.756***	0.766***	0.750***
	(0.000430)	(0.00102)	(0.000482)	(0.000263)	(0.000323)	(0.000289)	(0.00289)	(0.00252)	(0.00264)
XI	0.00842***	-6.59e-05	0.00669***	-0.0162***	-0.00995***	-0.0130***	-0.00691***	-0.00269	-0.00146
	(0.000318)	(0.000151)	(0.000385)	(0.00263)	(0.00268)	(0.00318)	(0.00202)	(0.00225)	(0.00201)
XI*Corruption	-0.000103***	-2.91e-05***	-0.00157***	0.000118***	1.88e-05	0.00104	0.000186***	0.000149***	0.00229***
	(4.87e-06)	(2.94e-06)	(0.000127)	(3.97e-05)	(4.79e-05)	(0.000966)	(2.99e-05)	(3.91e-05)	(0.000619)
GDP per capita	-0.000229***	-0.000142***	-0.000117***	-0.00149***	-0.00323***	-0.00218***	-0.000358	-0.000199	-0.000481**
	(4.83e-05)	(3.40e-05)	(3.64e-05)	(0.000346)	(0.000329)	(0.000354)	(0.000237)	(0.000284)	(0.000214)
GDP growth	1.80e-05***	1.82e-05***	1.71e-05***	0.000481***	0.000604***	0.000513***	0.000152***	0.000132***	0.000142***
	(4.74e-06)	(4.22e-06)	(3.36e-06)	(3.47e-05)	(4.01e-05)	(2.94e-05)	(4.12e-05)	(1.71e-05)	(4.18e-05)
Population (Log)	-0.000747***	-0.000526***	-0.000762***	-0.00271***	-0.00273***	-0.00262***	-0.000659***	-0.000682***	-0.000521***
	(1.40e-05)	(1.44e-05)	(3.35e-05)	(0.000329)	(0.000355)	(0.000411)	(0.000173)	(0.000184)	(0.000151)
Inflation	1.57e-05***	1.31e-05***	1.46e-05***	9.65e-05***	0.000103***	9.76e-05***	8.74e-06*	1.50e-05***	7.70e-06*
	(7.33e-07)	(3.64e-07)	(1.18e-06)	(5.24e-06)	(3.22e-06)	(3.88e-06)	(4.97e-06)	(1.98e-06)	(4.57e-06)
GFC	0.000141***	0.000105***	0.000116***	-0.00390***	-0.00308***	-0.00358***	0.00437***	0.00459***	0.00433***
	(3.51e-05)	(1.83e-05)	(3.60e-05)	(0.000154)	(0.000278)	(0.000116)	(0.000340)	(0.000275)	(0.000359)
Political stability	-0.00109***	-0.000507***	-0.000940***	0.00140***	-0.000898*	0.00133***	0.000781***	0.000597*	0.00196***
	(3.91e-05)	(3.43e-05)	(3.95e-05)	(0.000386)	(0.000471)	(0.000379)	(0.000246)	(0.000361)	(0.000268)
Constant	0.0165***	0.0102***	0.0139***	0.0329***	0.0665***	0.0437***	0.0129***	0.00885**	0.00534
	(0.000531)	(0.000487)	(0.000826)	(0.00456)	(0.00550)	(0.00665)	(0.00352)	(0.00406)	(0.00325)
AR1. (PV)	0.037	0.066	0.037	0.017	0.019	0.017	0.001	0.000	0.001
AR2.(PV)	0.972	0.756	0.969	0.355	0.350	0.354	0.137	0.130	0.135
Hansen test	0.353	0.222	0.352	0.808	0.687	0.804	0.713	0.585	0.709
Observations	869	820	869	869	820	869	869	820	869
Number of id	49	49	49	49	49	49	49	49	49

Table 5: Instrumental variable regressions

Instrumental variable regression results of the impact of corruption in African countries on FDI (1-3), Trade (4-6) and Construction (7-9) from China. All variables are defined in Appendix 1. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

	FDI			Trade			Construction		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	CPI	BCI	CCPT	CPI	BCI	CCPT	CPI	BCI	CCPT
Corruption	-0.000130*	-0.000112*	-0.00146	0.00700*	0.00729***	0.162*	0.00325***	0.00128***	0.0526***
	(6.73e-05)	(6.67e-05)	(0.000896)	(0.00409)	(0.00136)	(0.0954)	(0.00123)	(0.000252)	(0.0128)
GDP per capita	-0.000141	-0.000235	9.92e-05	0.0444	-0.00417	0.0327	0.0140**	0.00183	0.0110***
	(0.000464)	(0.000261)	(0.000474)	(0.0303)	(0.00709)	(0.0214)	(0.00554)	(0.00131)	(0.00295)
GDP growth	2.24e-05	1.67e-05	2.15e-05	0.00179***	0.00162**	0.00177***	-0.000209	-2.92e-05	-0.000252*
	(3.61e-05)	(2.81e-05)	(3.67e-05)	(0.000681)	(0.000780)	(0.000540)	(0.000243)	(0.000163)	(0.000139)
Population (Log)	-0.000728**	-0.000569***	-0.000742**	0.0137	-0.0181***	0.0163	0.000576	-0.00284***	-0.000227
	(0.000301)	(0.000173)	(0.000328)	(0.0136)	(0.00516)	(0.0141)	(0.00300)	(0.000964)	(0.00201)
Inflation	2.80e-05***	3.17e-05***	3.24e-05***	0.000637***	0.000525***	0.000403***	0.000279***	0.000228***	0.000180***
	(6.35e-06)	(5.37e-06)	(6.38e-06)	(0.000152)	(0.000148)	(0.000105)	(5.17e-05)	(3.08e-05)	(2.44e-05)
GFC	-0.000117	-0.000272	-0.000466	-0.0127	9.32e-06	0.00245	-0.00991	-0.00313	-0.00252
	(0.000818)	(0.000630)	(0.000808)	(0.0176)	(0.0176)	(0.0119)	(0.00615)	(0.00369)	(0.00309)
Political stability	-0.00109*	-0.000938**	-0.000961*	0.0365**	0.0366***	0.0472***	0.0149**	0.00466**	0.0150***
	(0.000578)	(0.000466)	(0.000580)	(0.0144)	(0.0112)	(0.0172)	(0.00597)	(0.00219)	(0.00356)
Constant	0.0203**	0.0155***	0.0139*	-1.014*	-0.0414	-0.956**	-0.340**	-0.0395	-0.234***
	(0.00892)	(0.00570)	(0.00755)	(0.592)	(0.138)	(0.432)	(0.140)	(0.0258)	(0.0608)
Observations	917	868	869	850	850	898	898	850	898
Number of id	49	49	49	48	48	48	48	48	48
Under identification test									
LM statistic	51.379	91.847	118.428	189.295	198.810	39.372	54.379	202.503	94.192
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Weak identification test									
F statistic	21.01	20.53	26.842	29.895	36.462	19.86	19.86	37.351	14.798
Over identification test									

Appendix 1: Variable Definitions

Variable	Definition	Source
CPI	Corruption perception index	Transparency International
BCI	Bayesian Corruption Index	Quality of Government Institute
CCPT	Control of Corruption	Kaufman and Kray (2018)
FDI	The amount of foreign direct investment from China to each African country	China Africa Research Initiative (2020)
Trade	The sum of exports and imports transactions of each African country with China	China Africa Research Initiative (2020)
Construction	Construction revenue by China from African countries	China Africa Research Initiative (2020)
GDP per capita	The value of GDP per unit of population in a country	World Development Indicators
GDP growth	The yearly growth in GDP	World Development Indicators
Population (Log)	Log of the total population in each African country.	World Development Indicators
Inflation	The level of inflation in the country as measured by the Consumer Price Index in each country	World Development Indicators
GFC	An indicator variable that takes the value for years representing the Global Financial Crisis (2008 and 2009) and 0 for other years.	'Authors' construction.
Political Stability	The level of political stability in each African country	World Governance Indicators