Determinants of Chinese Foreign Direct Investment in Selected North African Countries

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Abstract: China and North African economic relations are expanding rapidly as both an important trading partner and increasingly as an investor into the region. The main objective of this study is to examine the determinants of Chinese FDI in selected North African countries of Egypt, Sudan and Morocco between 2002 and 2020. The study employed standard OLS and standard date panel techniques which enabled us to differentiate between efficiency effects of fixed and random effects. The results of the analysis indicated that market size, openness and inflation rate were found to be positively related to Chinese FDI inflows with the coefficient of openness significant. The indicators of institutional quality namely control of corruption and government effectiveness were found to be positively related to Chinese FDI inflows with coefficients significant. Furthermore, political stability, regulatory quality, and rule of law were found to be negatively related to Chinese FDI inflows with their coefficients significant. Voice and accountability is found to be negative and insignificant. The result for DEBT is found to be negatively related to Chinese FDI inflows with coefficient significant. The results revealed that geographical distance between sampled North African countries and China does not encourage Chinese FDI inflows. Based on the results, this study concludes that improvement in the institutional quality, and enacting policies that facilitates open economy and helps moderates inflation rate are keys to spurring Chinese FDI inflows to the selected North African countries.

Keywords: Institutional Environment, Foreign Direct Investment, Policy Reforms, China, and North Africa.

1. Introduction

The economic relations between China and North African economies are expanding rapidly in recent years as both an important trading partner and increasingly as an investor into the region. Trade and investment between China and North Africa has increased at unprecedented rates in last years. In 2000, the total trade between China and the region had reached a value of US$1.4 billion. By 2021, the corresponding value had increased to almost US$36.59 billion (CARI & Boston, 2021). This trend is expected to continue, according to the increase in China's demand for oil and energy sector. China is now a major buyer of oil from North African countries and in the same time China is considered a major importer for North Africa market. China's presence in North African countries as an investor has generally been very well perceived. The population views the developments as an inevitable and inexorable transition from Africa's colonial past, and the local governments are eager to cooperate with China also for its abundance of foreign exchange and the flexible attitude to human rights and sensitive issues. Furthermore, it seems that China offers a different approach to development policy characterized more or less by the 'trade not aid' principle, while Beijing's declared vision of modern Africa is that of economic growth and social transformation. At the same time, African countries do not criticize China's political system and human rights record while they can provide the Asian powerhouse with virtually all natural resources that Beijing craves for; and all this without adhering to strict institutional arrangements that so often accompany European Union (EU) or United States of America (US) trade agreements.

China's growth and capacity to move in thirty years from under-development and extreme poverty to an emerging global power and one of the largest exporters of manufactured goods has attracted the attention of many developing countries. China's rising involvement in Africa in general and North African economies in particular is part and parcel of its growing share of trade and investment worldwide. Historically, diplomatic relations between China and North Africa date back to 1950s. Egypt was the first African country to enter into diplomatic relations with the People's Republic of China, in 1956 (Mohamed, Shen and Rania, 2014). China's 'going global' strategy is explicitly encouraging Chinese companies to invest overseas and to increase cooperation with other emerging economies. China is seeking to increase its 'soft power' and build positive diplomatic relations with other countries; increasing investment and strengthening trade ties with particular countries, while not undermining other states' sovereignty (CARI & Boston, 2021). The Chinese government has adopted diplomatic and trade measures with Africa in general and North Africa in particular to drive economic growth and development, guarantees long-term supply of raw materials and enhance its soft power. China's recent investments in North Africa have been preceded by a vibrant and expanding trade relationship with many North African countries over the past decade. Understanding the Chinese trading relationship with North Africa will provide a helpful context for their investment relationship. China's total exports to North Africa have been far greater than its imports from North Africa, resulting in a large trade surplus in favour of China.

China has been strategically ramping up engagement with countries such as Egypt, Algeria, and Morocco, which lie at the intersection of three key regions: the Middle East, Africa, and the Mediterranean. Beijing's growing footprint in these countries encompasses, but is not limited to, trade, infrastructure development, ports, shipping, financial cooperation, tourism, and manufacturing. Through this engagement, China is setting up North Africa to play an integral role in connecting Asia, Africa, and Europe. China is expanding its cooperation with North African countries, not only in the economic and cultural spheres, but also those of diplomacy and defense (CARI & Boston, 2021). Furthermore, it is showcasing a development model that seeks to combine authoritarianism with economic growth; a model that has an eager audience among regimes across the Middle East and North Africa (MENA) region. As such, China's growing role in North Africa is likely to have far-reaching economic and geopolitical consequences for countries in the region and around the world. From existing literatures, few studies however have focused on the grasping of this trade and investment relationships between China and North Africa (CARI & Boston, 2021). The main objective of this study was to analyze China's growing role in North Africa with emphasis on providing answers to the role institutional environment play in China's relations with Egypt, Sudan and Morocco between the periods of 2002-2020. Specifically, it examined some selected economic variables (market size, trade openness, DEBT, inflation and exchange rate) and their influences on China-North Africa trade relationship with particular emphasis on their effects on Chinese foreign direct investment (FDI) inflows. Lastly, it offered a set of policy recommendations aimed at North African, European, and United States (US) policymakers. In order to achieve the objectives of the study and due to availability of data, the research relied on quantitative methods to analyze the factors that impacts on Chinese FDI flow to the selected North African countries.

2. Literature Review

2.1. Institutional environment

Kolstad and Wiig (2011, 2012) find that weak institutions in African resource-rich economies attract Chinese FDI. They also argue that these results are not specific to Chinese MNEs since FDI from other countries is also attracted by weak institutions in resource-rich countries. We are unable to comment on the impact of institutions on market-seeking FDI as this literature (Mourao, 2018; Shan, Lin, Li and Zeng 2018) has, so far, not considered the institutional context of the host country. Whether we are considering resource-seeking motives for FDI or market-seeking motives, it is clear that institutions must play a role in facilitating such investment (Naudé and Krugell, 2007). There is considerable literature (Buckley, Clegg, Cross, Liu, Voss and Zheng 2007; Cuervo-Cazurra and Genc, 2008) that argues that firms might be attracted by weak institutional environments. While some literature has considered the role of corruption and risk in attracting investment (Asiedu, 2006), fewer researchers have considered whether these factors have different effects when FDI is motivated by resources (Kolstad and Wiig, 2011, 2012) rather than markets. Buckley, Clegg, Cross, Liu, Voss and Zheng (2007) and Cuervo-Cazurra and Genc (2008) base their arguments on MNEs from developing economies investing in other developing

countries. They do not take into consideration the interaction effects of host country institutional quality with its market size and natural resource availability.

2.2. Foreign Direct Investment (FDI)

China today is considered one of the top countries whether in FDI inflows or FDI outflows. In recent years, in line with China's Going Out strategy announced in 2000, China's overseas investment activities have increased greatly and at increasing rates. China's total outward foreign direct investment (OFDI) to North Africa by 2021 had reached US$36.59 billion (CARI & Boston, 2021). Policies have played strong supporting roles in bringing about this trend by facilitating and encouraging Chinese companies to make overseas investments. FDI is a net flow injected by an investor to acquire a 10 percent or more lasting management interest in a company that operates in an economy other than that of the investor (World Bank, 2004; Almfraji and Almsafir, 2014). The lasting interest implies a long-term relationship between the direct investor and the investee company, and the requirement of 10 percent or more necessitates significant influence to be exerted by the direct investor into the enterprise (UN, 1999).

2.3 Total FDI in North Africa

North Africa's primacy has been challenged by the growing prominence of Western Africa as an increasingly attractive investment destination. In 2012, there were three North African countries; Egypt, Libya and Algeria, among the top 10 African destinations for Chinese FDI, with Algeria being the second. The annual flow of foreign direct investment inflows to Northern Africa excluding Sudan remained well below US$10 billion until 2005, making the region an odd outlier on the African investment map (CARI & Boston, 2021). During the period from 1971 to 2002 North Africa witnessed great volatility of FDI inflows, but after 2002 the region got on a relatively safe path. Since then, inward FDI to North Africa was rising sharply until 2007, where FDI inflows reached its peak to be US$ 21 billion. After then, FDI inflows decreased sharply to reach only US$ 9 billion in 2012, as a result of financial crisis in 2008 and the Arab Spring revolutions in North Africa countries (Egypt, Tunisia, and Libya) in 2011.

Table 2.1 shows Chinese loans to North African Region by Lender. From the table, Sudan and Egypt benefitted the most from Chinese FDI inflows to the region. Sudan benefitted 48.3% allocation which represents the highest beneficiary of Chinese FDI inflows to the region and closely followed by Egypt with 41.1% allocation. Both countries benefited a total of 89.7% of Chinese FDI inflows to the region. The China Eximbank alone contributed 57.4% loans to the region which represents more than 50% total loans commitment to the region. This is followed by China Development Bank (CDB) with 24.3% loans to the region. Both loan providers have a total loans commitment of 81.6% to the region (CARI & Boston, 2021).

Table 2.1: Chinese Loans to North African Region by Lender (millions of US$, unadjusted)

North African Region	Eximbank	CDB	Supplier's Credits	ICBC	BOC	Other	TOTAL	% Allocation by Benefit
Algeria	0	0	0	0	0	9	**9**	0.10%
Egypt	1,967	3,100	160	0	0	54	**5,282**	41.40%
Morocco	1,022	0	0	150	0	8	**1,181**	9.20%
Sudan	4,209	0	1,276	0	0	685	**6,169**	48.30%
Tunisia	129	0	0	0	0	3	**132**	1.00%
TOTAL	**7,327**	**3,100**	**1,436**	**150**	**-**	**759**	**12,772**	100.00%
% Allocation by Lending	57.40%	24.30%	11.20%	1.20%	0.00%	5.90%	100.00%	

Source: Loan Data — China Africa Research Initiative (sais-cari.org)

2.4. Theoretical Framework

Analyses of the determinants of FDI often use the Eclectic Paradigm first put forward by Dunning (1993). This framework argues that a firm may become a multinational because of existing Ownership, Location, and Internalization (OLI) advantages. Ownership advantages could include proprietary information and intangible ownership rights of a company; location advantages determine where a multinational enterprise (MNE) chooses to locate; and internalization advantages influence whether a firm should produce a particular product in-house or to sub-contract to another firm. While some researchers (Sanfilippo, 2010) have argued that this paradigm is not appropriate for emerging market multinationals (EMNEs), which might have different motivations and practices, Narula (2006) and Dunning (2006) have countered that the framework can encompass a wide range of firms and OLI advantages. We use the eclectic framework as the context for our study. Before we do so, however, we will consider the empirical literature in this area. Table 2.2 below displays the advantages a company may experience with a particular growth strategy.

Table 2.2: Dunning's Eclectic Paradigm

Dunning's Eclectic Paradigm		Categories of Advantages		
		Ownership Advantages	Internalization Advantages	Location Advantages
	Licensing	Yes	No	No
Form of Market Entry	Export	Yes	Yes	No
	Foreign Direct Investment (FDI)	Yes	Yes	Yes

Source: Dunning (1981)

2.5. Empirical Review

Ross, Omar, Xu and Pandey (2019) examined the impacts of the host country institutional environment on Chinese FDI in Africa. The study employed the pooled OLS model with both a fixed and random effects model. Results highlighted that countries that are able to provide a politically stable environment and control levels of corruption exert the greatest effects on Chinese FDI. After controlling for firm level motivation, the findings also revealed that as Chinese economic development evolves so does the apparent strategic direction of their investment patterns with greater attention now being given to investment quality and return on investment, rather than simply acquiring and extracting natural resources.

Markets vary by sector as well as by size, and, in the case of North Africa; the market size has been especially attractive to Chinese investors. Chinese firms have had significant experience in developing markets at home over the last few decades. Therefore, they were very well placed to do the same in North Africa. As mentioned above, Marukawa, Ito and Zhang (2014) found that between 1970 and 2013, the African construction industry has attracted the largest proportion of Chinese FDI (22%), followed by the Mining (12%) and Retail and Wholesale (10%) sectors. Kolstad and Wiig (2011), in turn, found that a large part of China's FDI to Africa was in the telecommunication sector. Having said this, it is also possible that countries with good quality of existing infrastructure might attract some types of market-seeking FDI (Sanfilippo, 2010; Tang, 2014). Thus, market size may have two possible effects on FDI. On the one hand, countries with large markets may attract FDI because they are easy to do business in. On the other hand, those with a small market size might attract FDI from firms that wish to invest. Researchers have found a positive relationship when studying the effect of a range of proxies for market size, including host country Gross Domestic Product (GDP) (Kolstad & Wiig, 2011; Shan, Lin, Li and Zeng 2018), the ratio of host country GDP to Chinese GDP (Cheung and Qian, 2009), host country population size (Mourao, 2018) and host country GNI (Sanfilippo, 2010). The high rates of growth of African countries in recent decades have also made Africa's markets (World Bank, 2020) attractive to FDI, especially to Chinese investors.

Munmi (2021) examined the effect of institutions on location choice of FDI using a novel dataset for bilateral FDI of India. The study follows prior works to argue that institutions have positive association with FDI. The study observed three broadly considered institutional pillars namely state; judiciary system, bureaucracy system, and property right protection, to assess influence of institutions on location choice of FDI. The research expanded on previous studies with attention on the impact of firms' heterogeneity on the link between institutions and FDI using gravity model. The study revealed institutions have significant and positive influence on location choice of FDI and that institution of advance economies is positively associated with FDI. Surprisingly, a negative relationship existed between institutions of emerging economies and FDI. The study put the firms into four separate bins according to their size to capture the firms' heterogeneity. Results show that large-sized firms are more likely to invest in countries with good institutions.

The relationship between trade openness and foreign direct investments inflow has been empirically examined in various regions of the world. Some of the conclusions revealed by the scientific research are useful as practical premises of the current study (Ghosh 2007; Güriş and Gözgör 2015; Koojaroenprasit 2012; Musyoka and Orcharo 2018; Sjöholm 2016). Zaman, Zang, Gulam, Shah and Muhamad (2018) and Patsupathi and Sakthi (2019) performed different studies regarding influence of trade openness on FDI in selected Asian countries of India, Iran, and Pakistan over the time of 1982 to 2012. Pooled OLS and fixed effect model were used to estimate panel data on individual country effect, group effect, and time effect. The study outcome revealed exchange rate and inflation were used to proxy macroeconomic stability. Empirically, GDP per capita variables had statistically significant impact on FDI inflow. The research work revealed high trade openness led to increase in FDI inflows globally and nationally. They concluded trade openness would be better option to sustaining foreign direct investment inflows long-term.

Jelena, Slavica and Vesna (2021) investigated interaction between FDI and institutional quality measures in Western Balkans. The empirical study is based on panel techniques and causality in the period 2002–2017. The results indicated that control of corruption, political stability, and rule of law cause an inflow of FDI at the Western Balkans. The bidirectional relationship has been found between political stability and rule of low, control of corruption and rule of law, and control of corruption and inflow of FDI. Thus, the study recommended that stronger institutional measures cause higher FDI flows.

Asiamah, Michael, Ofori & Afful (2018) in their study of determinants of FDI inflow to Ghana in the period 1990 to 2015 revealed inflation rate, exchange rate, and interest rate had statistically significant and negative influence on FDI inflows. They found gross domestic product, electricity production, and TU had positive relationship on FDI in long-term and short-term. The granger causality revealed bi-directional between electricity production, telephone usage, and FDI. However, inflation rate, interest rate, exchange rate, GDP, and FDI has unidirectional causality. They employed a Johansen's approach to co-integration test and vector autoregressive model.

Shan, Lin, Li and Zeng (2018) examined influence of market size, natural resources, and five major institutional factors on Chinese FDI in Africa. The paper adopted regression analysis on panel data across 22 countries for the period 2008-2014. Findings showed that natural resources did not play a significant role in attracting Chinese investments, but market size did. Among the institutional factors, only voice and accountability had positive and statistically significant influence attracting Chinese FDI. Rule of law and control of corruption were insignificant while political stability and regulatory quality had negative and significant effect. The paper concluded that African countries that are struggling with improving their poor institutional quality in the short term could effectively attract Chinese investment by reducing investor psychic distance, e.g. establishing a closer political link with China. Nevertheless, measures of improving institutional quality, long term were important.

Alshamsi, Rasid and Muhammad (2015) empirically studied inflation rate and GDP per capita and how they influence on inward foreign direct investment flows to United Emirates over a period of 1980-2013, adopting Auto Regressive Distributed Lag model. The study revealed GDP per capita had positive influence on FDI inflows that is significant. For inflation rate, it was not statistically significant both long-run and short-run and with sign contrary to theoretical expectation. The study recommended the addition of variables such as: infrastructure, political stability, country risk, and country openness would provide better hypothesis in estimating inflation rate and GDP per capita influence on FDI inflows (Mohamed and Sidiropoulos 2010).

Ho, Khairunnisa, Linda and Nurain (2013) empirically studied relationship between trade openness, market size and other fundamentals on FDI in speedy developing six countries namely: Brazil, China, India, Russia, South Africa, and Malaysia over a period of 1977-2010. They applied two econometrics models as macroeconomics factors on FDI inflow and country specific factors on FDI inflow. The macroeconomic factors are: market size (GDP), trade openness, financial development, exchange rate, interest rate, government consumption, and inflation rate The country specific factors are: Economic freedom, wages, human capital, and infrastructure quality. The study revealed market size (GDP), interest rate, literacy rate, economic freedom, and infrastructure quality (both models) influenced FDI more in BRICS countries and Malaysia. The study revealed GDP statistically and positively controls FDI flow to Russia, China, and Malaysia (Fazekas 2016). For trade openness, a significant influence on FDI flow to Malaysia was the outcome. (Karimi and Yusop 2009; Sazali, Ghazali, Huey and Abu Bakar 2018)

Paul and Jadhav (2020) explored institutional determinants and their influence on FDI inflows; applying outcomes from twenty-four emerging economies. The empirical outcomes revealed infrastructure quality, trade cost and institutional quality are significant determinants of FDI inflows.

Dinkneh and Jiang (2020) examined the impacts of institutional quality and business environment on Chinese FDI flow to Africa. The paper derived aggregate indicators of institutional quality and business environment using economic and governance institutions, doing business, transport efficiency indicators conducting a principal component analysis. The paper employed P.P.M.L procedure to estimate the gravity model of FDI flow as it can solve zero-valued observations and heterogeneity problems. Findings disclosed that institutional quality and business environment indicators are significant motivators of Chinese FDI flow to Africa. The paper findings are robust and similar after accounting for endogeneity concerns using an IV estimator. The paper concluded that improvement in the business environment and the institutional quality of African countries are keys to spurring Chinese FDI flow to Africa.

Sabir, Samina, Anum, and Kamran (2019) studied impact of institutional quality on FDI inflows. They applied panel data for low, lower middle, upper-middle-, and high-income nations over a period of 1996–2016 and adopted Generalized Method. The study control variables are: inflation, trade openness, GDP per capita, value-added share of agriculture (% of GDP) and mobile phone subscriptions (per 100 people). They study revealed institutional quality positively controls FDI. Detailed results revealed control of corruption, government effectiveness, political stability, regulatory quality, rule of law, and voice and accountability influence on FDI flows were higher in advance than in developing nations. Also, GDP per capita, agriculture value-added and inflation negatively influenced FDI flows in advance economies. For developing economies, GDP per capita, trade openness, agriculture value-added and infrastructure reacted positively and significantly to FDI flows.

Appiah, Seth, Karel, Sandra, Mansoor, Michael, Joseph, Zdenka, Sylvie, and Kamil (2020a) study revealed a positive connection between efficiency of corporate administration and degree of FDI. Also, they found negative connection between the level of FDI and securities standard regulation as regard companies created in African countries.

3. Methodology

3.1. Data

Panel data from three selected North African countries of Egypt, Sudan and Morocco were employed based on availability over the period 2002-2020. The data was sourced from World Development Indicator (WDI) as published by World Bank 2022. Specifically, the model adopted is predicated on Dinkneh and Jiang (2020); which is the modified original gravity model presented by Tinbergen (1962). The variables incorporated are: institutional environment, market size, trade openness, creditworthiness, and inflation rate.

3.2. Variables Descriptions

3.2.1. Dependent Variable

Our dependent variable is the stock of Chinese FDI flow to the selected North African countries covering 2002-2020. The data is sourced from the Statistical Bulletin of China's OFDI (SBCOFDI) published by National Bureau of Statistics of China. FDI is an investment that is made to acquire a lasting interest in an enterprise(s) operating outside the investor's economy (Sothan and Zhang, 2017 and Nangpiire, Rodrigues, and Adam, 2018).

3.2.2. Independent Variables

The study included a range of independent variables capturing the classic determinants of FDI, such as the size of markets and trade openness as well as the institutional environment in each country. We obtained data on institutions from the Worldwide Governance Indicators (World Bank, 2022). There are six such indicators; Rule of Law (RL), Control of Corruption (CC), Voice and Accountability (VA), Government effectiveness (GE), Political stability (PS), and Regulatory Quality (RQ) (Kaufmann, Kraay and Mastruzzi, 2010). We included each of the indicators separately in our model to consider whether they might have differential effects on Chinese FDI inflows.

3.2.2. Control Variables

The control variables are: creditworthiness (Ostadi and Ashja, 2014) and inflation rate (Kolstad and Wiig, 2011). They both captured the stability of the economy. Table 3.1 summaries variable in the model

Table 3.1: Main Variables

Variables	Description	Source of Data
Dependant variable Chinese FDI	Stock of China's FDI flow to each African country	SBCOFDI
Explanatory variables: RGDP TOP VA PV RQ RL CC GE	Market Size Trade (% of GDP) Voice and accountability Political stability and absence of violence Regulatory quality Rule of law Control of corruption Government effectiveness	WDI WDI WDI WDI WDI WDI WDI WDI
Control Variables: INF DEBT	Inflation, GDP deflator (annual %) Debt to gross domestic product ratio	WDI WDI

Source: Researchers' Summary Analysis (2023)

3.3. Model Specification

The study analytical foundation is based on Dunning (1993) eclectic macroeconomic FDI structure and the framework considered expanded issues in determining FDI flow. The study used market size and trade openness with six WGIs. The model specification included also, creditworthiness and inflation rate. The literature reviewed has no consensus regarding observations on these FDI determinants. In addition, many empirical approaches can be used for cross-country panel data. Specifically, the fundamental models are Ordinary Least Squares, Fixed Effects, and Random Effects. The fixed effects model assumes that country-specific effects are correlated with the explanatory variables. On the other hand, the random-effects model assumes that country-specific effects are random and uncorrelated with independent variables. However, the Hausman test was conducted to determine which econometric model best fit the data. Finally, a fixed-effects model was adopted. The fixed-effects model is represented as equation 3.1 below:

$$Y_{it} = \beta_0 + \beta_1 X_t + \varepsilon_{it} \qquad\qquad\qquad 3.1$$

Where β_0 represents the unobserved time-invariant individual effect and ε_{it} represents the error term. Incorporating the study variables of interest in equation (3.1) results in equation (3.2) as follows:

$$LogFDI_{it} = \beta_0 + \beta_1 LogIQ_{it} + \beta_2 RGDP_{it} + \beta_3 TOP_{it} + \beta_4 INF_{it} + \beta_5 DEBT_{it} + \varepsilon_{it} \quad 3.2$$

Where, $LogFDI_{it}$ = logarithm of FDI inflow attracted by country i at period t. $LogIQ_{it}$ = logarithm of institutional quality indicators of countries i at period t. $INFR_{it}$ = inflation rate of country i for period t. $RGDP_{it}$ = real gross domestic product of country i for period t. TOP_{it} = trade openness of country i for period t. $DEBT_{it}$ = Debt to gross domestic product ratio of country i for period t. β_1- β_5 are coefficients of given variables. β_0 = the unobserved time-invariant individual country effect. ε_{it} = the error terms.

3.3.1 Economic A priori Expectations

The parameter estimates were checked to ascertain their conformity with postulations of economic theories. Table 3.2 specifies the supposed relationship between and or among the dependent and independent variables.

Table 3.1: Summary of the A priori Expectation

Regressand	Regressors	Relationship
FDI	Market Size (RGDP)	+
FDI	Trade Openness (TOP)	+
FDI	Control of Corruption (CC)	+
FDI	Government Effectiveness (GE)	+
FDI	Political Stability/Absence of Violence (PV)	+
FDI	Rule of Law (RL)	+
FDI	Regulatory Quality (RQ)	+
FDI	Voice and Accountability (VA)	+
	Control Variables:	
FDI	Creditworthiness (DEBT)	-
FDI	Inflation Rate (INF)	-

Source: Researchers' Summary Analysis (2022)

4. Results and Discussion

4.1 Results and Findings

The pair-wise correlation was done between control of corruption (CC), government effectiveness (GE), political stability (PV), regulatory quality (RQ), rule of law (RL), and voice & accountability (VA). The table 4.1 below reflects the Pearson coefficient value for their significance values.

Table 4.1: Correlation Matrix of WGIs' dimensions in selected North African countries

	Control of Corruption (CC)	Government Effectiveness (GE)	Political Stability (PS)	Rule of Law (RL)	Regulatory Quality (RQ)	Voice & Accountability (VA)
CC	1.00					
GE	0.93	1.00				
PS	0.86	0.89	1.00			
RL	0.90	0.97	0.87	1.00		
RQ	0.91	0.94	0.90	0.91	1.00	
VA	0.91	0.85	0.89	0.81	0.89	1.00

Source: Author' Computation using E-views output

Table 4.1 shows that all the institutional quality indicators have highly significant correlation ($r_{ij} > 0.6$ threshold) with each other. The study result shows that the problem of multicollinearity is highly possible. The matrix revealed all indicators have correlation with each other ranging from $r = 0.81$ for rule of law and voice and accountability to $r = 0.97$ for government effectiveness and rule of law. The relatively high correlation ($r_{ij} > 0.6$) among the variables shows that, they will be good candidates for factor analysis. The consistency checks conducted are Kaiser–Meyer–Olkin (KMO) value, Bartlett's test significance, Chi-square and the component matrix of the six dimensions. Table 4.2 presents a summary of the factor analysis output per year including consistency checks. The consistency checks conducted are Kaiser–Meyer–Olkin (KMO) value, Bartlett's test significance, Chi-square and the component matrix of the six dimensions.

Table 4.2: Factor Analysis Summary Outcome per Year

Variable	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6
KMO-Value	0.91	0.90	0.82	0.84	0.93	0.86
Bartlett's Test Approx. (P-Value)	0.02**	0.03**	0.02**	0.01**	0.00**	0.00**
% of variation by the extracted factor	82.1%	80.3%	81.4%	85.0%	87.7%	83.9%
Component Matrix						
Control of Corruption (CC)	0.41	0.00	-0.6	0.34	-0.56	-0.02
Govt Effectiveness (GE)	0.41	-0.37	-0.01	-0.03	0.32	-0.75
Political Stability (PS)	0.40	0.29	0.73	0.35	-0.28	-0.08
Rule of Law (RL)	0.40	-0.55	0.08	0.22	0.29	0.61
Regulatory Quality (RQ)	0.41	-0.02	0.07	-0.83	-0.31	0.14
Voice & Accountability (VA)	0.39	0.67	-0.25	-0.02	0.55	0.12

Source: Author's Computation using E-views output

From table 4.2, the KMO > 0.6 (the threshold required) as confirm from the correlation matrix shows that the data are adequate and the degree of information among the variables overlaps greatly (the presence of a strong partial correlation). That is, it is plausible to conduct factor analysis. Moreover, in Bartlett's test, the significant statistical test < 0.05 shows that the correlation matrix is indeed not an identity matrix (rejection of the null hypothesis), and hence, the data's suitability for factor analysis is also confirmed. The chi-square (X^2) values are statistically significant (> 70%) for the period tested and revealed a higher percentage of variation by the extracted factor. This upholds the rejection of the null hypothesis that the variables are unrelated. The summary statistics is presented in table 4.3, 4.4 and 4.5.

Table 4.3 presents the average overall IQ indicators. The study revealed that Morocco with 41.35 has the highest average overall IQ score by selected North African countries. This is followed by Egypt with 30.13 and Sudan has an average overall IQ score of 5.92 which is the worst. These results revealed that only Sudan has a score lower than the total average overall IQ score of 25.80. Furthermore, the study results (average institutional quality indicators by category) revealed that, Morocco has the best score in all six IQ indicators and closely followed by Egypt, while Sudan has the worst.

Table 4.3: Total Average Overall Institutional Quality Index				
Total Overall IQ Average = 25.80	Country	Egypt	Morocco	Sudan
	Overall	30.13	41.35	5.92
Average Institutional Quality Indicators by Category				
Indicators	Institutional Quality	Egypt	Morocco	Sudan
Control of Corruption (CC)		32.88	44.61	5.74

Government Effectiveness (GE)	38.10	46.89	6.73
Political Stability (PS)	16.94	32.06	3.51
Rule of Law (RL)	43.43	47.16	7.84
Regulatory Quality (RQ)	34.07	48.46	6.77
Voice & Accountability (VA)	15.33	28.92	4.92

Source: Author's Computation

Table 4.4 presents the distance between China and the selected North African countries. The study adopted total straight line distance.

Table 4.4: Distance Between China and Selected North African Countries					
	Country		Egypt	Morocco	Sudan
	Chinese FDI (Overall Mean)		277.98	61.29	317.76
	Score (Miles)		1	0	1
	Score (Km)		1	0	1
Mean Distance (MD)					
Air Travel (Miles)				Overall Mean	5,090
Physical Distance (Km)				Overall Mean	8,192
Actual Distance (AD)					
Country		Air Travel (Miles)	Criteria	Physical Distance (Km)	Criteria
Egypt	Distance	4,285	AD < MD	6,896	AD < MD
Morocco		5,999	AD > MD	9,654	AD > MD
Sudan		4,987	AD < MD	8,026	AD < MD

Source: Author's Computation

From table 4.4, selected North African countries with scores equal to 1 are closer to China and are expected to attract more Chinese FDI flows and vice versa. Egypt is the closest to China and followed by Sudan, both in terms of air travel and physical distance. On the other hand, Morocco is the farthest from China. The study results from table 4.3 and 4.4 revealed that, Sudan with the worst average overall IQ score and the second closest to China has the highest average Chinese FDI inflows of 317.76 million dollars. It is the most prefer destination of Chinese FDI inflows. Egypt, with the second worst average overall IQ score is the closest to China with average Chinese FDI inflows of 277.98 million dollars. It is the second prefer destination of Chinese FDI inflows. Morocco with the best average overall IQ score and farthest from China has average Chinese FDI inflows of 61.29 million dollars. It is the least prefer destination of Chinese FDI inflows. Table 4.5 shows the summary of descriptive statistics of the variables included in the models.

Table 4.5: Panel Summary Statistics of variable

Variable	Mean	Median	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.	Obs.
*FDI	219.01	46.20	428.86	2.51	8.49	132.05	0.00	57
*CC	27.75	32.69	16.98	-0.35	1.61	5.72	0.05	57
*GE	30.57	39.90	18.05	-0.44	1.46	7.45	0.02	57
*PS	17.51	12.26	12.95	0.08	1.28	7.04	0.02	57
*RL	32.81	43.75	18.71	-0.49	1.49	7.72	0.02	57
*RQ	29.77	32.43	18.40	-0.22	1.37	6.73	0.03	57
*VA	16.39	14.42	10.32	0.17	1.52	5.42	0.06	57
*RGDP	1.64	2.13	3.82	0.37	7.68	53.38	0.00	57
*TOP	47.39	45.25	24.45	-0.39	2.31	2.62	0.26	57
*DEBT	2.48	2.19	1.88	1.22	4.93	23.06	0.00	57

| *INF | 13.35 | 8.89 | 18.74 | 3.28 | 17.16 | 578.90 | 0.00 | 57 |

* Represents Non-log Variables

Source: Author's Computation using E-views output

It can be seen that variability is higher in the dependent variable FDI, as indicated by the standard deviation of 428.86, and there is greater difference in Chinese FDI inflows. For the explanatory variables, variability was higher, as indicated by the standard deviation; DEBT had the lowest variability of 1.88, while TOP had the highest variability of 24.45. Furthermore, PS, VA, RGDP, DEBT, and INF are positively skewed while CC, GE, RL, EQ, and TOP are negatively skewed. Variables with value of kurtosis < 3 are called platykurtic (fat or short-tailed) and all the IQ indicators and TOP qualified for this during the study period. On the other hand, variables whose kurtosis value > 3 are called leptokurtic (slim or long tailed) and RGDP, DEBT and INF qualified for this during the study period. Jarque-Bera test shows that not all residuals are normally distributed; the probability values of some do not exceed 5%. Additionally, before conducting the regression analysis, the study conducted a diagnostic test to check for the presence of multicollinearity between all pairs of variables. The summary statistics (Correlation Matrix) is presented in table 4.6.

Table 4.6: Correlation Matrix between Dependent and Independent Variables

	FDI	CC	GE	PS	RL	RQ	VA	RGDP	TOP	DEBT	INF
*FDI	1.00										
*CC	-0.16	1.00									
*GE	-0.20	0.93	1.00								
*PS	-0.36	0.86	0.89	1.00							
*RL	-0.25	0.90	0.97	0.87	1.00						
*RQ	-0.33	0.91	0.94	0.90	0.91	1.00					
*VA	-0.28	0.91	0.85	0.89	0.81	0.89	1.00				
*RGDP	-0.03	0.38	0.40	0.32	0.37	0.40	0.28	1.00			
*TOP	-0.12	0.80	0.83	0.82	0.76	0.87	0.83	0.45	1.00		
*DEBT	-0.15	0.77	0.78	0.78	0.71	0.74	0.81	0.33	0.69	1.00	
*INF	-0.05	-0.59	-0.60	-0.52	-0.51	-0.60	-0.54	-0.48	-0.69	-0.50	1.00

* Represents Non-log Variables

Source: Author's Computation using E-views output

The correlation matrix shows high prospects for the selected model. There is a strong positive correlation between the institutional quality indicators, hinting at a potential mediation effect, while also raising a suspicion regarding multicollinearity. As for the other variables, the moderate to strong correlation amongst them, as well as the independent and mediator variable raises concern regarding multicollinearity. Yet, Gujarati (2009) emphasized that multicollinearity can be tolerated as long as collinearity between variables is not perfect. Nonetheless, a formal diagnostic test will be carried out after fitting the model to reach a formal conclusion regarding the significance of the issue. To avoid a false regression, stability was verified on the panel data before the regression analysis. The LLC (2002), IPS (1997), ADF and Maddala and Wu (2007) are presented in table 4.7.

Table 4.7: Summary of Panel Unit Test Results

	At level				At first difference			
Variables	Levin, Lin & Chu t*	Im, Pesaran and Shin W-stat	ADF-Fisher Chi-square	PP-Fisher Chi-square	Levin, Lin & Chu t*	Im, Pesaran and Shin W-stat	ADF-Fisher Chi-square	PP-Fisher Chi-square

FDI	0.35	-0.69	6.96	15.70	-1.62*	-3.38*	22.31*	70.16*
CC	-1.47	-1.93	13.29	17.24*	-3.18*	-3.16*	20.86*	58.69*
GE	-1.41	-1.23	9.76	12.12	-2.17*	-2.99*	20.13*	155.47*
PS	0.31	0.24	3.97	8.91	-2.47*	-2.69*	18.02*	39.62*
RL	-0.26	-0.06	7.62	11.59	-3.94*	-4.23*	28.27*	177.08*
RQ	0.08	-0.17	5.44	12.85	0.85	-2.35*	16.83*	272.73*
VA	2.30	-0.19	4.79	24.41*	1.61	-2.20*	17.44*	189.56*
RGDP	-0.55	-1.10	8.87	14.08	-4.00*	-4.97*	33.31*	107.46*
TOP	-0.43	-0.25	7.14	4.24	-3.84*	-2.65*	17.64*	21.32*
DEBT	-3.99*	-2.65*	20.05*	33.05*	-5.51*	-4.45*	29.34*	36.48*
INF	0.48	0.02	11.57	18.86	-3.28*	-3.55*	25.04*	287.59*

*Indicates significant at 5% (test critical values at 5%).

Source: Constructed by Author using E-views output

The LLC, IPS, ADF-Fisher and PP-Fisher test presents all variables not stationary at level 1 (0) as in Table 4.7. The LLC, IPS, ADF-Fisher and PP-Fisher results revealed that DEBT was stationary at level. The PP-Fisher results revealed that CC and VA were stationary at level. Furthermore, after first differencing, all variable became stationary except for RQ and VA in LLC test result. The unit root tests revealed that some variables have unit roots and cannot be directly employed for empirical analysis without differencing (Granger and Newbold, 1974). Consequent upon the results, further analysis into ascertaining long-run equilibrium was estimated using the Kao (1999) test in conducting the cointegration test and outcomes presented in table 4.8.

Table 4.8: Summary of Panel Unit Cointegration Results

Estimates	t-Statistic	Prob.
ADF	-3.2222958	0.0006
Residual Variance	19.54168	
HAC Variance	11.23337	

Source: Constructed by Author using E-views output

From table 4.8 and at the significance level of 5%, the panel ADF rejects the null hypothesis within the dimension of the panel Kao statistics indicating panel cointegration relationship exists. This means that, in each short-term period, all variables tend to adjust to each other to achieve long-term balance. The stationary variables and model was used on the outcome of the Kao (1999) test results. Next, panel data regression estimations were performed and the study reported findings for the pooled OLS, fixed and random effect models to enable comparison and to allow for robustness of results. The results for the Pooled OLS, fixed and random effects estimates are shown below.

4.2. Regression Results

4.2.1. Model A: Economic Determinants of Chinese FDI inflows

The baseline macroeconomic specification use across the regressions includes openness, market size, inflation rate, DEBT and the stock of Chinese FDI flows (to estimate clustering effects) over this study period of 19 years. This model is employed to validate the role of economic determinants in Chinese FDI flow to the selected North African countries prior to including institutional quality indicators. The results revealed the random effect estimation technique is most reliable based on the Hausman test (P-value > 0.05). The R-squared (0.16) indicates market size, TOP, INF, and DEBT explain 16% variation in Chinese FDI inflows. The results for the Pooled OLS, fixed and random effects are shown in table 4.9.

Table 4.9: Model A (Estimation Results)

Variables	(1) Pooled OLS	(2) Fixed Effects	(3) Random Effects
Constant	4.79**	3.09**	4.79**
	(0.00)	(0.04)	(0.00)
IQ	-	-	-
	-	-	-
RGDP	0.04	0.03	0.04
	(0.54)	(0.67)	(0.58)
TOP	0.01	0.03	0.01
	(0.57)	(0.17)	(0.60)
DEBT	-0.53**	-0.28	-0.53**
	(0.00)	(0.27)	(0.01)
INF	-0.02	-0.02	-0.02
	(0.22)	(0.23)	(0.26)
Observations	57	57	57
R-squared	0.16	0.19	0.16
Hausman test	5.42		
P-value	0.2463		

* Significant at 1%, ** Significant at 5%, *** Significant at 10%

Source: Constructed by Author using E-views output

This model result revealed that the economic magnitude of the selected North African countries measured by market size and trade openness have positive and but insignificant effects on Chinese FDI inflows for both the pooled OLS, fixed and random effects models which are in line with economic theories. This implies that market size and openness play a key role in attracting Chinese FDI inflows, though not significantly. A 1% change in both market size and openness increases Chinese FDI inflows by almost 0.04% and 0.01% respectively. The findings for market size are in line with empirical studies of Tsai (1994), Asiedu (2006), Chakrabarti (2001) and Chen, Dollar, and Tang (2015). Also, the study supports evidences that open economies attract better FDI inflows (Yanikkaya, 2003; Liargovas, Skandalis, and Konstantinos, 2012; and Kakar and Khilji, 2011). Furthermore, the study results revealed that DEBT and inflation rate have negative effects on Chinese FDI inflows for both the pooled OLS, fixed and random effects models which are in line with economic theories. For the OLS and random effects model, DEBT was significant, but insignificant in the fixed effects model. This finding is in lines with Ostadi and Ashja (2014). Inflation rate is insignificant in all three models of pooled OLS, fixed and random effects which are in line with empirical studies of Anyanwu and Erhijakpor (2004), Hintošová, Michaela, Zuzana and Rastislav (2018), Ross, Omar, Xu and Pandey, (2019), and Vijesandiran and Vinayagathasan (2020).

4.2.2 Model B: Institutional Quality versus Chinese FDI inflows

This model investigates the role of institutional quality in determining Chinese FDI inflows to the selected North African countries. The most reliable estimation technique is found to be the fixed effects model (Hausman test P-value < 0.05). The model explains 50% of the variation in the dependent variable; Chinese FDI inflows. The Pooled OLS, fixed and random effects estimates is presented in table 4.10.

Table 4.10: Model B (Estimation Results)

Variables	(1) Pooled OLS	(2) Fixed Effects	(3) Random Effects
Constant	5.00**	13.70**	5.03**
	(0.00)	(0.00)	(0.00)
LOG(CC)	0.99**	0.91**	0.99**
	(0.03)	(0.04)	(0.02)

LOG(GE)	3.99**	3.28**	3.99**
	(0.00)	(0.01)	(0.00)
LOG(PS)	-1.21**	-1.15**	-1.21**
	(0.00)	(0.01)	(0.00)
LOG(RL)	-2.18**	-3.23**	-2.18**
	(0.00)	(0.00)	(0.00)
LOG(RQ)	-2.02**	-2.76**	-2.02**
	(0.05)	(0.01)	(0.04)
LOG(VA)	-0.20	-0.50	-0.20
	(0.79)	(0.58)	(0.77)
Observations	57	57	57
R-squared	0.45	0.50	0.45
Hausman test	18.90		
P-value	0.0043		

* Significant at 1%, ** Significant at 5%, *** Significant at 10%

Source: Constructed by Author using E-views output

This model result reveals that the institutional quality indicators of the selected North African countries measured have mixed effects on Chinese FDI inflows for both the pooled OLS, fixed and random effects models. Control of corruption and government effectiveness has positive effects on Chinese FDI inflows which are in line with economic theories. The study revealed also that political stability, rule of law, regulatory quality and voice and accountability have negative and significant effects on Chinese FDI inflows in the pooled OLS, fixed and random effects models. The institutional quality indicators (except for voice and accountability) are all statistically significant which are in line with empirical studies of Gani (2007), Khoury and Peng (2011), Naudé and Krugell (2007), Anyanwu (2012), Busse and Hefeker (2007), Mathur and Singh (2013), Wheeler and Mody (1992), Mengistu and Adhikary (2011), Cheung, De Haan, Qian, and Yu (2012), Kolstad and Wiig (2012), Cleeve (2012) and Asiedu (2006).

4.2.3   Model C: General Model

The choice of the appropriate model is selected based on the results from Hausman test. Specifically, the Hausman test (Correlated Random Effect test) was employed in selecting the appropriate model for the analysis. The most reliable estimation technique is found to be the fixed effects model (Hausman test P-value < 0.05). The model explains 61% of the variation in the dependent variable; Chinese FDI inflows. The Pooled OLS, fixed and random effects estimates is presented in table 4.11.

Table 4.11: Model Estimation Results (Model C)

Variables	(1) Pooled OLS	(2) Fixed Effects	(3) Random Effects
Constant	5.17**	15.79**	5.17**
	(0.00)	(0.00)	(0.00)
LOG(CC)	1.23**	1.14**	1.23**
	(0.01)	(0.01)	(0.01)
LOG(GE)	4.09**	3.54**	4.09**
	(0.00)	(0.01)	(0.00)
LOG(PS)	-0.99**	-0.98**	-0.99**
	(0.03)	(0.04)	(0.02)
LOG(RL)	-1.87**	-3.32**	-1.87**
	(0.03)	(0.00)	(0.02)
LOG(RQ)	-3.18**	-4.11**	-3.18**
	(0.01)	(0.00)	(0.00)
LOG(VA)	-0.50	-1.05	-0.50

	(0.56)	(0.25)	(0.53)
RGDP	0.002	0.001	0.001
	(0.97)	(0.87)	(0.97)
TOP	0.05**	0.05**	0.05**
	(0.02)	(0.02)	(0.01)
DEBT	-0.34	-0.39**	-0.34**
	(0.06)	(0.05)	(0.05)
INF	0.001	0.02	0.001
	(0.59)	(0.28)	(0.57)
Observations	57	57	57
R-squared	0.54	0.61	0.54
Hausman test	20.43**		
P-value	0.0254		

* Significant at 1%, ** Significant at 5%, *** Significant at 10%

Source: Constructed by Author using E-views output

This model result (like in model B) reveals that the institutional quality indicators of the selected North African countries measured have mixed effects on Chinese FDI inflows for both the pooled OLS, fixed and random effects models. Control of corruption and government effectiveness has positive effects on Chinese FDI inflows which are in line with economic theories. The study revealed also that political stability, rule of law, regulatory quality and voice and accountability have negative effects on Chinese FDI inflows in the pooled OLS, fixed and random effects models. The institutional quality indicators (except for voice and accountability) are all statistically significant which are in line with empirical studies of Gani (2007), Khoury and Peng (2011), Naudé and Krugell (2007), Anyanwu (2012), Busse and Hefeker (2007), Mathur and Singh (2013), Wheeler and Mody (1992), Mengistu and Adhikary (2011), Cheung, De Haan, Qian, and Yu (2012), Kolstad and Wiig (2012), Cleeve (2012) and Asiedu (2006). Also, this model revealed that the economic magnitude of the selected North African countries measured by market size and trade openness have positive effects on Chinese FDI inflows for both the pooled OLS, fixed and random effects models which are in line with economic theories. This model showed that openness has a significant effect in the pooled OLS, fixed and random effects estimates which imply that openness play a significant role in attracting Chinese FDI inflows. Market size on the other hand has an insignificant effect (like in model A). The findings for market size are in line with empirical studies of Tsai (1994), Asiedu (2006), Chakrabarti (2001) and Chen, Dollar, and Tang (2015). Also, the study supports evidences that open economies attract better FDI inflows (Yanikkaya, 2003; Liargovas, Skandalis, and Konstantinos, 2012; and Kakar and Khilji, 2011). Furthermore, this model results revealed that DEBT have a negative effect on Chinese FDI inflows for both the pooled OLS, fixed and random effects estimates which is in line with economic theories. For the fixed and random effects estimates, DEBT was significant, but insignificant in the pooled OLS estimate. This finding is in lines with Ostadi and Ashja (2014). Inflation rate have a positive and insignificant effects on Chinese FDI inflows in all three estimates of pooled OLS, fixed and random effects which is line with empirical studies of Hintošová, Michaela, Zuzana & Rastislav (2018). Inflation rate influence on Chinese FDI inflows is insignificant and positive in the short-run. The outcome negates theoretical expectation and indicates little benefits in reducing inflation from moderate to low levels; in the highly specific terms of attracting FDI from China.

4.3. Discussion of Results

This study examines the determinants of Chinese foreign direct investment in selected North African countries of Egypt, Morocco and Sudan between 2002 and 2020. This study revealed that geographical distance does not play any significant role in determining Chinese FDI inflows. This is supported by the fact that Sudan and Egypt which are closer to China than Morocco; geographically, attracted more Chinese FDI inflows which implies that geographical distance between the sampled North African countries and China does not encourage the inflows of FDI from China. This finding contradicts Internalization theory that states, market-seeking firms serves geographically proximate economies through exports, and more distant markets through FDI (Buckley and Casson, 1981).

The study revealed that the institutional quality indicators of the selected North African countries measured have mixed effects on Chinese FDI inflows. Control of corruption and government effectiveness has positive effects on Chinese FDI inflows which are in line with economic theories. The study revealed also that political stability, rule of law, regulatory quality and voice and accountability have negative effects on Chinese FDI inflows. The institutional quality indicators (except for voice and accountability) are all statistically significant which are in line with empirical studies of Gani (2007), Khoury and Peng (2011), Naudé and Krugell (2007), Anyanwu (2012), Busse and Hefeker (2007), Mathur and Singh (2013), Wheeler and Mody (1992), Mengistu and Adhikary (2011), Cheung, De Haan, Qian, and Yu (2012), Kolstad and Wiig (2012), Cleeve (2012) and Asiedu (2006). This study supports that institutional quality in the selected North African countries are key in explaining variations in Chinese FDI inflows.

The study revealed that openness has significant effect on Chinese FDI inflows. The result is in line with empirical studies of Makoni (2018), Sahoo (2006) and Zaman, Zang, Gulam, Shah and Muhamad (2018). This result indicates higher level of openness will attract greater Chinese FDI in the long run.

The study revealed that market size has a positive effect on Chinese FDI inflows which is line with empirical studies of Alshamsi, Rasid and Muhammad (2015), Ho, Khairunnisa, Linda and Nurain (2013), Asiamah, Michael, Ofori & Afful (2018), Wijeweera and Mounter (2008), and Zaman, Zang, Gulam, Shah and Muhamad (2018). This study also revealed that market size is insignificant which is line with empirical studies of Wickramarachchi (2019), Quazi (2007), Musabeh and Zouaoui (2020) and Muzurura (2016).

The study results are supported further with the fact that Egypt with the largest population (109.3 million) among the selected North African countries was the second preferred destination of Chinese FDI inflows. Sudan with the second highest population (45.66 million) was the most preferred destination of Chinese FDI inflow and Morocco with the least population (37.08 million) was the least preferred destination of Chinese FDI inflows.

The study supports the evidence that DEBT have significant influence on Chinese FDI. This study outcome is in line with theoretical expectation, as the expected relationship between Chinese FDI inflows and DEBT used to proxy creditworthiness is negative. This is because increasing foreign debt will destroy foreign investors' vision and create negative expectations of the future economy (Ostadi and Ashja, 2014).

Inflation variable have mixed signs in model A and model C (the general model). The general model revealed inflation is positive and insignificant in the short-run. This could be the outcome of potential endogeneity and closely related policy factors. Inflation in model A has negative and insignificant effect on Chinese FDI inflows which is in line with economic theories. However, in both models, the inflation variable cannot significantly explain the variation in Chinese FDI inflows throughout the years. The study supports the evidence that, inflation rate as a measure of macroeconomic stability in the selected North African countries affects Chinese FDI inflows insignificantly. Thus, a more stable macroeconomic environment should encourage inward FDI, as steady and predictable rates of inflation enable long-term planning in relation to consumer purchasing power and firm level profit expectations (Ross, Omar, Xu & Pandey, 2019).

5. Conclusion

The results have empirically examined the determinants of Chinese FDI inflows in selected North African countries of Egypt, Morocco and Sudan between 2002 and 2020. The study revealed trade openness, control of corruption, government effectiveness, political stability, regulatory quality, and rule of law to be statistically significant. This implies that, these variables influence Chinese FDI inflows in the long-run. For voice and accountability, market size, DEBT and INF, they are statistically insignificant. This implies that these variables have little influence on Chinese FDI inflows in the long-run. Except for market size and voice and accountability, the main independent variables (institutional quality indicators and trade openness) have significant long-run and short-run influence on Chinese FDI inflows in the study period. This indicates voice and accountability and market size might be inefficient in attracting Chinese FDI inflows to the sample North African economies compared to competing ones.

This study results revealed that, institutional quality of the selected North African countries have significant influence in explaining variations in Chinese FDI inflows indicating economies with poor institutional quality indicators ordinarily will attract less Chinese FDI and vice versa. Unsworth (2010) states, institutional quality and economic development reinforce each other over the longer term. Thus, North African countries should promote policies with long-term political stability that reduces investor uncertainty and strengthen investor's confidence (Ross, Omar, Xu, & Pandey, 2019). Also, the study revealed that market size showed consistent positive impacts on Chinese FDI inflows. Larger host countries' markets are associated with higher FDI due to larger potential demand and lower costs due to scale economies (Chen, Dollar, & Tang, 2015). This implies that Chinese investors will seek profit maximisation, thus would prefer to invest in countries that have large market size as it delivers a large labour force and potential consumer that can promote production. The results revealed that openness play a key role in attracting Chinese FDI inflows. Openness which affords greater degree of freedom in moving resources across national boundaries appears to have been a major factor driving Chinese FDI inflows into the North African countries. This implies that, the more a country is open to trade, the more incentives it creates and the more Chinese FDI inflows it will attract. Trade openness is beneficial to a developing country not only to foster foreign investment and technology transfer, but also to reduce poverty and child labour and to encourage human capital accumulation (Yanikkaya, 2003). Thus, China and North Africa must keep reforming their investment, economic, and trade policies to promote fruitful economic and trade cooperation.

The study results revealed DEBT has a negative relationship with Chinese FDI inflows. Generally, an increased debt service will lead to increased taxes that discourage foreign direct investors since they are not guaranteed of good returns to their investments. Higher debt service widens budget deficit thus reducing public investment (Clements & Nguyen, 2003). This implies that, North African countries with huge debt portfolio will destroy foreign investors' vision and confidence due to perceived negative expectations of the future economy (Ostadi and Ashja, 2014). Also, from the regression result, inflation influences Chinese FDI inflows positively, but does not significantly explain variations. This might be due to potential endogeneity closely related to other policy factors. The study recommends open trade policies that improve investment climate and market size, boosts innovation, and encourages political and economic stability in the sampled North African countries. This study has only included three independent variables (institutional quality indicators, market size and trade openness) and two control variables (DEBT and INF). Thus, the study suggests future research should include more independent variables like natural resources, exchange rate, wage rate, infrastructure, and corporate tax.

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