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DRIVERS OF BILATERAL FDI INFLOWS IN NORTH AFRICA REGION: A GRAVITY MODEL APPROACH

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ABSTRACT

Purpose- This paper aims to explore the main determinants of bilateral foreign direct investment (FDI) and investigate the relationship between bilateral trade and FDI inflows in five North African countries with 25 investment partners.

Methodology- The study employs a gravity model and pooled time-series-cross-sectional regression method, utilizing a 10-year average over the period 2001-2010, the significance of this research lies in its contribution to the existing literature as the first study to analyze the factors influencing bilateral FDI inflows between North African countries and their primary investing partners.

Findings- The results indicate that bilateral trade, economic size, financial development, and common language of host countries are key drivers of bilateral FDI inflows between North African countries and other nations. Furthermore, the presence of a common language between host and home countries has a significant and positive impact on bilateral FDI. However, the distance between host and home countries has a negative effect on FDI.

Conclusion- This paper concludes that foreign direct investment (FDI) between North Africa and other nations was influenced positively by the economic sizes of both the home and host countries while being negatively affected by the physical distance between them. Additionally, the results demonstrate that the presence of a common language and bilateral trade play crucial roles, with their effects being highly positive and significant. This suggests that FDI flows tend to be greater between North African countries and those with whom they already have substantial bilateral trade transactions. Furthermore, the study concludes that France, the United Arab Emirates, Spain, and Kuwait are the most significant investing countries in the North African region in terms of FDI, surpassing other nations.

Keywords: Bilateral FDI inflows, bilateral trade, gravity model, North Africa, geographical and culture factors.
JEL Codes: F14, F21, F40, F30, F15

1. INTRODUCTION

The past three decades have witnessed significant changes that have greatly impacted the restructuring of economic infrastructure in various aspects. Among these changes, technological advancements and the liberalization of financial systems have emerged as crucial factors. As a result, these transformations have played an important role in promoting economic development by facilitating the flow of foreign investments between nations.

Consequently, FDI is widely recognized as a key contributor to the inflow of capital, which has significantly contributed to the advancement of development and economic growth in numerous developing countries. where, FDI serves as a vital conduit for financial progress, enhancement of productivity, and the exchange of technology and knowledge across borders. Additionally, it plays a role in generating employment opportunities, fostering trade, and expediting overall growth and development (Asiedu, 2006 and Pradhan et al., 2017).

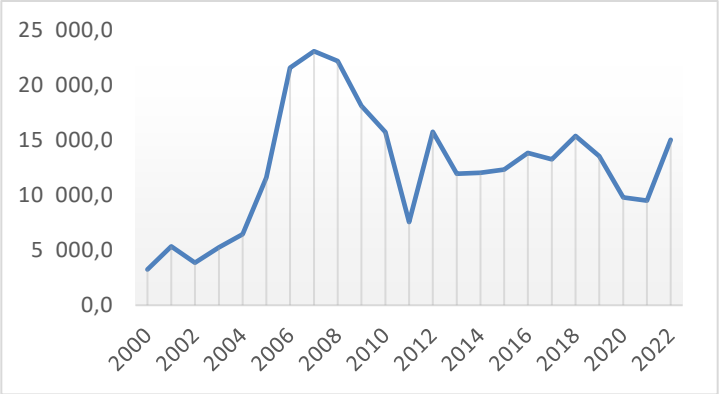
And, as a result of the spillovers of foreign direct investment (FDI), governments in the most countries were prompted to seek optimal policies regarding FDI and endeavored to adopt more liberalized approaches to attract investor confidence. As a consequence, governments initiated a diverse array of policies aimed at fostering a secure environment for investors, enabling them to conduct their business activities without encountering unnecessary risks (Asiedu, 2004, Dellis et al, 2022).

Thus, governments in North African countries, namely Algeria, Egypt, Libya, Morocco, and Tunisia, initiated comprehensive economic reforms with the objective of restructuring their economies through liberalization and gradually integrating with

the global economy. Statistically, according to UNCTAD data (2022), the amount of FDI flows into North Africa countries have raised from an annual average of US $ 2.2 billion during the 1990s and US$ 12.5 billion during 2000s, and reached its peak in 2007 by the US $ 23.1 billion. However, the level of FDI inflows notably decreased in 2011 by US$7.5 billion, which is a repercussion of political disturbances (Arab Spring) to reach an annual average from 2011 to 2015 by the US $ 11.9 billion as shown in Figure 1.

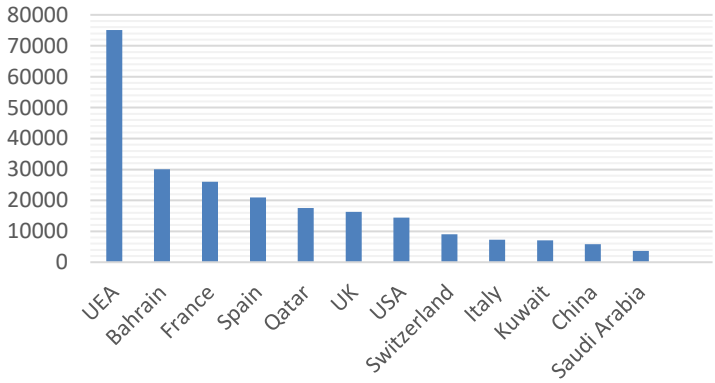
According to The Arab investment and export credit guarantee corporation (2016), the main investment players in this region are divided into two groups: the first group consists of GCC countries, while the second group comprises countries with a colonial history in this region. In the North Africa region, the GCC countries, namely UAE, Bahrain, Qatar, Kuwait, and Saudi Arabia, emerged as the most significant source of Greenfield investment. The total investments from these countries reached over 133US$ billion between 2003-2015. On the other hand, the colonial countries, including France, Spain, UK, USA, and Italy, ranked as the second-largest source of foreign investment for this region, as depicted in Figure 2.

Figure 1: Trend of FDI Inward in North Africa (US$ million) (2000-2022)



Source: UNCTAD data,2022.

Figure 2: Main Greenfield FDI Contributors in North Africa by Origin (US$ million) (2003-2015)



Source: The Arab investment and export credit guarantee corporation, 2016

This paper employs a gravity model to investigate main determinants of bilateral FDI in host countries (North Africa countries), and examining the relationship between bilateral trade and FDI inflows using a pooled time-series -cross-sectional regression method (10-years average over the period 2001-2010) for net FDI inflows in Five North African countries with 25 investment partners countries which are (France, Italy, UK, Germany, Spain, France, Switzerland, Turkey, Holland, Belgium, Canada, China, South Korea, Singapore, USA, Egypt, Emirates, Qatar, Libya, Kuwait, Bahrain, Tunisia, Morocco, Algeria, and Saudi Arabia).

This paper is composed of four sections and organized as follows: section 2 offers a concise literature review on the gravity model, section 3 Data and methodology which includes the explanation main factors influencing bilateral FDI inflows through a gravity approach, and section 4 presents the study's conclusion.

2. LITERATURE REVIEW

The gravity model of trade in international economics draws its theoretical foundation from gravity models in social science, specifically Newton's law of gravity. This model has been subsequently adapted and employed in the context of international trade and investment. Its fundamental concept revolves around utilizing the economic size and geographical distance between countries to forecast bilateral trade flows. In the literature, this model has been enhanced and tailored for diverse objectives, incorporating additional variables that encompass shared cultural and historical attributes, such as a common language or borders (Boughanmi, 2008, Osabuohien et al,2019). There are Numerous investigations have been conducted utilizing this framework since the 1960s, encompassing the works of Poyhonen (1963) and Linnemann (1966). These studies have deduced that the geographical separation between nations exerts an adverse impact on the bilateral trade, whereas the Gross Domestic Product (GDP) of the trading nations has a positive influence on exports. As a result, the dynamics of bilateral trade can be elucidated by the subsequent specification

$$\text{Ex}ij = \beta 0(\text{GDP}i)\beta 1(\text{GDP}j)\beta 2(Dij)\beta 3(Aij)\beta 4uij \quad (1)$$

Where, EXij is the value of trade from country i to country j, GDP i, GDPj is the value of GDP for countries i and j, Dij is the geographical distance between the economic center of countries i and j, Aij is other factors that aid or resist the trade flow between countries i and j, and uij is error term. The application of the gravity model offers a theoretical basis for various FDI theories. Specifically, the use of the gravity model can offer explanations for the Dunning eclectic paradigm (Market-seeking FDI), which has been previously studied by examining the relationship between FDI and the size of the market in both the home and host countries. Moreover, the monopolistic competition theory is well-explained by the gravity model, which suggests that countries with similar characteristics trade distinct goods due to varying consumer preferences, as noted by Krugman (1980) and Bergstrand (1985). Consequently, firms engage in foreign activities to cater to the diverse needs of consumers and to strengthen their monopolistic dominance. The gravity model, originally designed to explore the determinants of international trade flow between countries, and it has been utilized to estimate bilateral FDI. This model has been further developed to investigate the determinants of bilateral investments between countries. The significance of using the gravity model in this study lies in its ability to provide a comprehensive understanding of the role of geographical and cultural factors in determining the level of FDI within the region. Additionally, the model enables us to examine whether bilateral trade between home and host countries can increase FDI inflows between them. The gravity model takes into account factors originating in both the home and host countries that affect bilateral trade or foreign investment flows between nations (Duong et al, 2021). Thus, the utilization of the gravity model in forecasting trade integration and spatial distribution among nations has been explored in various studies, including those conducted by Antonucci and Manzocchi (2006), Ravishankar and Ekanayake et al. (2010), Stack (2014), and Osabuohien et al. (2019). These investigations have revealed that bilateral trade is significantly influenced by factors such as GDP and the geographical distance between countries. Meanwhile, Numerous research studies, including Grosse and Trevino (1996), De Mello-Sampayo (2009), Petri (2012), and Paniagua and Sapena (2014), have employed a gravity model to examine the determinants of bilateral foreign direct investment (FDI) patterns between nations. The majority of these studies have found that market size is the primary positive factor that influences FDI flows between countries, while the distance between the home and host nations is the primary negative factor that affects FDI flows between countries. (Duong et al, 2021).

3. DATA AND METHODOLOGY

North African countries are widely recognized as one of the most prosperous regions in terms of natural resources and geographical location. Consequently, this study aims to explore the factors driving the expansion of 25 investment partners within this region, with a particular focus on the countries that contribute the most to foreign direct investment (FDI). To achieve this objective, the research utilizes bilateral FDI inflow data between five North African countries, namely Algeria, Egypt, Libya, Morocco, and Tunisia, and their 25 investment partner countries (please refer to the appendix for a comprehensive list of these countries). The analysis employs a pooled time-series cross-sectional regression method, averaging data over a 10-year period from 2001 to 2010. The selection of North African countries, specifically from the Arab region, is based on a variety of factors. Firstly, these countries are geographically close to each other, which allows for easier comparison and analysis. Secondly, they share a common coastline, which has influenced their historical and economic development. Moreover, these countries have all experienced the impacts of colonialism from different directions, shaping their political and social landscapes. However, the time period from 2000 to 2010 was specifically chosen for several reasons. Firstly, there was a scarcity of available data for continuous periods, especially after 2010 and the outbreak of the Arab Spring.

This lack of data posed challenges in analyzing bilateral investment between most North African countries (Egypt, Libya, and Tunisia) and the rest of the world. Additionally, the period between 2000 and 2010 is widely recognized as a highly successful period in terms of attracting foreign direct investments in the region, as evidenced by figure 1. Moreover, within the economic literature focusing on the determinants of bilateral foreign direct investment (FDI), there has been a limited number of studies that have specifically examined the factors influencing bilateral FDI within the Middle East and North Africa (MENA) region. Additionally, most of the previous empirical studies in this area have primarily focused on analyzing FDI inflows into MENA countries as a whole, rather than investigating the determinants of bilateral FDI within the region. Furthermore, none of these studies have utilized the gravity model, particularly in relation to the North Africa region. The scarcity of research on bilateral FDI in the MENA region can be attributed to the lack of available data on this specific type of FDI within the region. However, between the years 2000 and 2010, researchers gained access to data on FDI flows between MENA countries, which became accessible through various sources such as the Arab Investment and Export Credit Guarantee Corporation, the Organization for Economic Co-operation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD), Bilateral FDI Statistics, and the CEPII research and experts on the world economy.

3.1. Data Sources and Variables Selection

The dependent variable used in this study is the logarithm of net FDI inflows bilateral FDI inflows While the argument selection of independent variables summarized in the following section. *Economic Size*: According to the investment theories literature, the volume of foreign direct investment (FDI) between nations is influenced by the economic size of both the host and home countries, as measured by their GDP. This relationship suggests that the GDP of the host country indicates its ability to accommodate new foreign investments, while the GDP of the home country reflects its potential to expand investments and activities overseas (Petri, 2012; Paniagua and Sapena, 2014; Sengupta and Puri, 2020).In this estimation, the study will use the natural logarithm of real GDP for host and home countries as a proxy for economic size. The expected sign of the economic size of both sender and receiver FDI countries is to be positive. *Geographical and Culture Factors:* According to the gravity model, the significance of geographic distance as a determinant of investment choice activities is emphasized. As the physical distance between the home and host country increases, it not only raises transportation costs but also complicates access to information between them. Consequently, the cost of investment activities tends to be higher when there is a greater geographic distance between the partners. To measure this distance, the study utilized the natural logarithm of bilateral physical distance in kilometers between the home and host country, obtained from the CEPII database. It is expected that the effect of bilateral distance between the countries will be negative, as supported by previous research conducted by Aggarwal et al. (2012), Aleksynska and Havrylchyk (2013), Kahouli and Maktouf (2015), and Dorakh (2020). Furthermore, the investigation analyzed the impact of a common borders factor by employing a binary variable set to one for countries that possess a shared border and zero otherwise. The anticipated effect of common borders is positive. In simpler terms, the presence of a shared culture, encompassing language and religion, between the home and host nations can result in a reduction in information costs and facilitate communication. This study utilized the binary variable set to one for both countries that share an official or second language. Consequently, the expected direction of the common language variable is positive (Mishra and Jena,2019). *Bilateral Trade:* According to Carstensen and Toubal (2004) and Aggarwal et al. (2012), Albulescu and Goyeau (2019) there is a positive correlation between bilateral trade relations and bilateral foreign direct investment (FDI) between investment partners. The level of bilateral trade is determined by the total bilateral export between the home and host country, relative to their respective GDPs, as measured by the following equation.

$$BT\ ij = ((Xi)+(xj))/(GDPi+GDPj) \quad (2)$$

Where the BT i j is the value of bilateral trade from country i to country j ,GDP i, GDP*j* is the value of GDP for countries i and j , Xi is the total of export that flow to i country from j country, Xj is the total of export that flow to j country form i country. This study used the CEPII database (which based mainly on IMF data) to measure the bilateral export between countries. The expected sign is to be positive, where the greater bilateral trade should enhance FDI between countries. *Inflation Rate:* Additionally, it has been found in several studies that the inflation rate is significant factor that influence the attraction of foreign direct investment (FDI). When the inflation rate is higher, the host country's currency tends to depreciate against the home currency, making it more affordable for foreign investors to acquire assets in the host country. This, in turn, increases the likelihood of FDI inflows. However, the depreciation of the currency can have a negative impact on foreign investors when they repatriate their profits, as their purchasing power decreases. Moreover, the variance of inflation is considered an indicator of economic stability and reflects how well the government manages fiscal and monetary policies. Several studies, including those by Onyeiwu and Shrestha (2004), Asiedu (2006), Udoh and Egwaikhide (2008), Hailu (2010), and Heshmati (2017), have investigated the relationship between inflation and FDI. The findings consistently show that inflation has a negative effect on FDI, and lower levels of inflation tend to attract more inward FDI in developing countries. In a similar vein, Naude and Krugell (2007) concluded that inflation is a significant factor that impacts investors' decisions to invest in African countries. This study utilizes the annual percentage change in the Consumer Price Index (CPI) as a proxy for measuring the

inflation rate. The anticipated direction of the estimated coefficient of inflation is negative. *Financial System Development*: The development of the financial system in the host country is an additional factor that can significantly impact an investor's decision. A well-established financial system enables a higher capacity to enhance the productivity of foreign capital by effectively allocating financial resources to projects with the highest rate of return. Additionally, it provides a convenient channel for accessing finance. This notion is supported by Kaur et al. (2013). Moreover, a well-developed financial market has the potential to facilitate the flow of information and reduce transaction costs, thereby attracting foreign direct investment (FDI) more easily. This finding is highlighted by Ezeoha and Cattaneo (2012).

In this study, the domestic credit provided by the financial sector (% of GDP) in the host country was utilized as a proxy for financial development, with an anticipated positive effect. *Bilateral Investment Treaties (BITs):* Investment treaties have been identified in several studies as a significant factor in attracting foreign direct investment (FDI). These agreements, such as bilateral investment treaties (BITs), are considered as part of institutional reforms that have facilitated the inflow of FDI. BITs provide investors with higher standards of legal protection and guarantees for their foreign investments compared to what is offered under national laws.

Notably, various studies, including those by Grosse and Trevino (2005), Medvedev (2012), and Buthe and Milner (2014), have found a positive and significant relationship between the number of BITs signed and inward FDI. Similarly, Buss et al. (2010) and Berger et al. (2013) have examined the impact of BITs on FDI attraction. Their findings indicate that signing bilateral investment agreements leads to a reduction in disparities between countries and promotes domestic reforms. Additionally, these agreements help to eliminate trade barriers between states, with the majority of studies confirming their positive effect on foreign investment attractiveness. Consequently, policymakers in developing countries consider increasing FDI through BITs as a strategic goal (Kox and Romagosa, 2020). In this study, a dummy variable is employed, taking a value of one if both countries have a bilateral enforce investment treaty, and zero otherwise. The expected sign of the estimated coefficient for international investment agreements with FDI inflows is positive.

Human Capital Development: Human capital is another crucial factor in attracting foreign direct investment (FDI) to the host country. The availability of skilled labor in the host country has a direct impact on the volume of FDI inflows. However, nations with weak human capital and lower wages may struggle to attract FDI, even if the wages of unskilled labor are low. This is because multinational corporations prioritize skilled labor and may avoid investing in countries with insufficient human capital. Feeny et al. (2014) also emphasized the importance of human capital in absorbing foreign knowledge and achieving positive FDI spillovers. Their study used the human development index to measure human capital development in host countries, with a positive expected sign.

3.2. Empirical Estimation

A pooled time-series -cross-sectional regression method has been used (10-years average over the period 2001-2010) for net FDI inflows in Five North African countries. The specification of the regression model used in this study can be outlined as follows, data definitions and sources shown in table 1.

$$\text{Ln}FDIij=\alpha+\beta 1\text{LnGDP}i+\beta 2\text{LnGDPj}+\beta 3\text{LnDist}ij+\beta 4\text{bitrade}ij+\beta 5\text{BIT}ij+\beta 6\text{comlang}ij+\beta 7\text{combord}ij+\beta 8\text{colhist}ij+\beta 9\text{findev}$$

$$+\beta 10\text{inflation}+\beta 11\text{HDI}+\gamma t \quad (3)$$

Table 1: Data Definition and Sources

Variable	Description	Source
LnFDIij	The natural logarithm of Net FDI inflows from country(host) i to country (home) j.	-The Arab Investment and Export Credit Guarantee Corporation -UNCTAD -OCED
LnGDPi	Real gross domestic product for host country in US$ (Natural Log)	UNCTAD
LnGDPj	Real gross domestic product for home country in US$ (Natural Log)	UNCTAD
Lndistij	Natural logarithm of bilateral physical distance in KM between home and host country.	CEPII database
Bitradeij	Total of bilateral export between home and host country over the real GDP for both.	CEPII database, IMF UNCTAD

BITij	A dummy variable equal to one if the home and host country have bilateral investment treaties or zero otherwise.	UNCTAD
Comlangij	A dummy variable equal to one if the home and host countries share the same (official or second) language or zero otherwise.	CEPII database
Combordij	A dummy variable equal to one if the home and host countries shar same border or zero otherwise	CEPII database
Colohistij	A dummy variable equal to one if the home and host countries have common colonial history or zero otherwise	CEPII database
Findev$i$	Domestic credit provided by financial sector (% GDP) in host country	World Bank
Inflation$i$	The annual percentage change in consumer price index (CPI) in host country	World Bank, UNCTAD
HDIi	Human development index in host country	HDI data

Table 2 illustrates the descriptive statistics of the variables used in this study. GDP of the home country is the variable with the highest mean and standard deviation among the independent variables. The average value of GDP of the home country is 27.1 percent and its standard deviation is 1.72 percent.

Table 2: Summary Statistics of the Variables

Variables	Obs.	Mean	Std. Dev.	Min	Max
LnFDIji	108	9.361685	1.331969	5.800598	11.32531
LnGDPi	108	27.05685	1.727539	23.7495	30.29225
LnGDPj	108	25.16153	0.569536	24.32563	25.86253
$LnDist_{ij}$	108	8.009846	0.8150635	6.26845	9.378292
$Bitrade_{ij}$	108	0.000788	0.0010604	0.000136	0.0065221
BIT_{ij}	108	0.611111	0.4897745	0	1
Comlangij	108	0.5092593	0.5022449	0	1
Combordij	108	0.083333	0.2776739	0	1
Colohistij	108	0.0740741	0.2631225	0	1
$Findev_j$	108	38.2	20.5623	10.7	60.8
Inflation$i$	108	6.627315	3.647288	2.15	13.11
HDIi	108	.6653704	0.556965	0.58	0.75

Tables 3 present that none of the variables correlates highly to each other, where the mean Variance Inflation Factor (VIF) of 1.83. Furthermore. As can be seen from the table, the correlations between the variables in our sample do not cause any serious multicollinearity problem

Table 3: Partial Correlation VIF Test

Variable	VIF	1/VIF
$Findev_j$	2.61	0.383493
Inflation$i$	2.23	0.448763
LnGDPi	2.08	0.480127
LnDistij	1.93	0.518946
Comlangij	1.93	0.519331
Bitradeij	1.84	0.542156
Combordij	1.64	0.610921

HDI*i*	1.60	0.645622
BIT*ij*	1.43	0.699383
LnGDPj	1.34	0.746253
Colohist*ij* j	1.24	0.774537
Mean VIF 1.83		

4. EMPIRICAL RESULTS

The findings of the main model, as depicted in Table 4, align with the majority of traditional gravity model variables in terms of significance and expected signs. From 2001 to 2010, both the GDP of the host countries in North Africa and their investment partners (home countries) exhibited a positive and significant influence on bilateral FDI. This observation supports the notion that a higher GDP in the host country signifies its ability to attract new foreign investments. This is attributed to the larger current market size and the anticipated growth in market size, which create opportunities for increased profitability and subsequently lead to higher levels of domestic and foreign investment. Consequently, this trend results in an upsurge in capital inflows. Furthermore, this expected outcome concerning the GDP of both host and home countries is consistent with the majority of gravity model studies. In terms of geographical and cultural factors, the analysis revealed that the bilateral distance between host and home countries has a negative impact on FDI. This finding aligns with the location theory, which posits that physical distance between the home and host country tends to increase transportation costs and impede information accessibility between them. Additionally, the presence of a common border between the North African countries was found to have a negative and significant effect on bilateral FDI, primarily due to conflicts along the border.

Conversely, the existence of a common language between the host and home countries was found to have a significant and positive influence on bilateral FDI. These results are consistent with the study conducted by Kahouli and Maktouf (2015). Furthermore, the study's findings demonstrate that an increase in bilateral trade between host and home countries leads to a corresponding increase in bilateral FDI. This correlation suggests a positive relationship between the two nations and reflects a high level of consistency in their transactions.

The results also indicate that bilateral trade has a significant and positive impact on bilateral FDI, which is consistent with the findings of Lien and Selmier (2012). Additionally, the paper found that financial development in the host country has a positive and significant coefficient with bilateral FDI. This is because a developed financial system reduces transaction costs and facilitates information flow, making it more attractive for foreign investors. This result is in line with the research of Ezeoha and Cattaneo (2012). However, the study did not find any significant impact on FDI attraction from investment treaties signed by host countries' governments or the inflation rate between 2001 and 2010.

Table 4: Cross -Section Estimation Results (10- Years Average)

variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
LnGDPj	0.634**	0.694***	0.732***	0.719***	0.720***	0.737***	0.980***	0.976***	0.941***	0.989**
	(0.274)	(0.260)	(0.257)	(0.256)	(0.256)	(0.257)	(0.313)	(0.313)	(0.312)	(0.461)
LnGDPj	0.329***	0.417***	0.571***	0.514***	0.508***	0.519***	0.542***	0.546***	0.538***	0.538***
	(0.0932)	(0.0965)	(0.125)	(0.129)	(0.128)	(0.126)	(0.130)	(0.127)	(0.130)	(0.131)
Lndistij		-0.658***	-0.620***	-0.813***	-0.791***	-0.656***	-0.637***	-0.640***	-0.608***	-0.606***
		(0.192)	(0.189)	(0.188)	(0.193)	(0.221)	(0.218)	(0.218)	(0.227)	(0.226)
Comlangij			0.819**	0.858**	0.847**	0.918**	1.002**	1.019***	1.018***	1.019**
			(0.411)	(0.402)	(0.400)	(0.403)	(0.387)	(0.387)	(0.387)	(0.389)
Combordiji				-1.537***	-1.501**	-1.817***	-1.799***	-1.797***	-1.749***	-1.746***
				(0.581)	(0.590)	(0.593)	(0.580)	(0.575)	(0.547)	(0.550)
Colohistij					0.198	-0.0466	-0.0820	-0.101	-0.113	-0.110
					(0.644)	(0.660)	(0.575)	(0.582)	(0.585)	(0.586)
Bitradij						257.0*	307.1**	304.6**	308.4**	308.5**
						(139.2)	(126.9)	(126.9)	(128.3)	(129.3)
Findevj							0.0171**	0.0195*	0.0182*	0.0189
							(0.00840)	(0.0111)	(0.0108)	(0.0122)
Inflationi								0.0191	0.0173	0.00813
								(0.0620)	(0.0620)	(0.0837)
BITij									0.131	0.126
									(0.302)	(0.303)
HDI										0.866
										(5.442)
Constant	-7.724	-6.364	-12.20	-8.689	-8.736	-10.71	-18.35*	-18.56*	-17.74*	-19.51
	(7.103)	(6.956)	(7.688)	(7.847)	(7.810)	(7.946)	(9.530)	(9.553)	(9.560)	(15.43)
Obs.	108	108	108	108	108	108	108	108	108	108
R-squared	0.144	0.224	0.253	0.296	0.296	0.309	0.342	0.342	0.343	0.403
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1										

Table 5 displays the fixed effect of home countries in the Middle East countries. The results demonstrate that Emirates, Kuwait, and Qatar exhibit the highest significance in terms of FDI in the North Africa region compared to the other countries in the sample. Additionally, the findings from European partners indicate that most European countries included in the sample display a positive significance compared to other countries, namely France, Italy, Germany, the UK, and Holland. Furthermore, in relation to the regionally fixed effect, the findings suggest that the Gulf region and Europe region countries have the most significant investment effect in the North Africa region compared to other investment partners.

Table 5: Cross -Section Estimation Results (Fixed Effect of Home Countries)

	MENA		Europ		Asia		North America		All regions
LnGDPj	0.971***	LnGDPj	0.895***	LnGDPj	0.810***	LnGDPj	0.983***	LnGDPj	0.658**
	(0.269)		(0.308)		(0.289)		(0.303)		(0.259)
LnGDPj	0.659***	LnGDPj	0.398**	LnGDPj	0.395***	LnGDPj	0.456***	LnGDPj	0.490***
	(0.190)		(0.170)		(0.148)		(0.129)		(0.138)
Lndistij	-0.949***	Lndistij	0.00885	Lndistij	0.135	Lndistij	-0.612***	Lndistij	0.301
	(0.198)		(0.309)		(0.323)		(0.225)		(0.322)
Comlang*ij*	0.360	Comlang*ij*	1.275***	Comlang*ij*	-0.0687	Comlang*ij*	1.099***	Comlang*ij*	-0.0957
	(0.488)		(0.480)		(0.473)		(0.371)		(0.416)
Combord*iji*	-0.303	Combord*iji*	-1.098**	Combord*iji*	-1.346**	Combord*iji*	-1.970***	Combord*iji*	0.761
	(0.796)		(0.505)		(0.526)		(0.520)		(0.678)
Bitrad*ij*	334.7**	Bitrad*ij*	378.8***	Bitrad*ij*	464.4***	Bitrad*ij*	336.7***	Bitrad*ij*	446.7***
	(145.1)		(132.5)		(138.0)		(114.8)		(118.3)
Findevj	0.0236**	Findevj	0.0188*	Findevj	0.0165	Findevj	0.0185*	Findevj	0.0132
	(0.00982)		(0.0105)		(0.0101)		(0.0104)		(0.00941)
inflation	0.0111	Inflation	0.0296	Inflation	0.0111	Inflation	0.00913	Inflation	-0.00794
	(0.0521)		(0.0612)		(0.0559)		(0.0572)		(0.0542)
BIT*ij*	-0.00219	BIT*ij*	0.0942	BIT*ij*	0.0994	BIT*ij*	0.127	BIT*ij*	0.551**
	(0.327)		(0.322)		(0.270)		(0.282)		(0.268)
Bahrain	1.141	Belgium	0.705	Turkey	-1.911***	Canada	-1.350*	Colohist*ij*	0.413
	(0.998)		(1.019)		(0.424)		(0.767)		(0.556)
Saudi arabia	-0.0894	France	1.359*	Singapore	-3.022***	USA	2.051***	Gulf	2.367***
	(0.603)		(0.687)		(0.659)		(0.615)		(0.672)
Emirates	3.266***	Germany	0.997*	S. Korea	-2.188**			Asia	-1.066
	(0.769)		(0.504)		(0.896)				(0.735)
Algeria	-2.821**	Holland	1.198***	Japan	-2.601***			Europ	1.506***
	(1.080)		(0.320)		(0.671)				(0.538)
Egypt	0.277	Italy	1.103*	China	-2.014***			N.America	0.620
	(0.881)		(0.642)		(0.616)				
Kuwait	2.131***	Spain	1.803***						
	(0.696)		(0.569)						
libya	-0.480	Switzerlad	0.250						
	(0.984)		(0.721)						
Morocco	-1.977	UK	2.415***						
	(1.227)		(0.570)						
Qatar	1.738**								
	(0.740)								
Tunisia	-0.847								
	(1.135)								
Turkey	-1.198**								
	(0.539)								
Constant	-19.11*	Constant	-18.47*	Constant	-15.55	Constant	-16.60*	Constant	-17.19*
	(9.839)		(9.558)		(9.681)		(8.993)		(8.863)
Obs.	108	Obs.	108	Obs.	108	Obs.	108	Obs.	108
R-squared	0.609	R-squared	0.474	R-squared	0.412	R-squared	0.417	R-squared	0.563

5. CONCLUSION

This paper examined the influence of bilateral trade and FDI inflows between North Africa countries, and a sample of 25. The results from the main gravity model indicate that FDI between North Africa and other countries was positively driven by the economic sizes of both home and host countries and negatively by the physical distance between them. The results also show that the roles played by common language and bilateral trade are particularly relevant and their effects are shown to be highly positive and significant, suggesting that bilateral FDI flows tend to be larger between North Africa countries and other countries that have already a large bilateral trade transaction. the study also concluded that France, Emirates, Spain, and Kuwait are the most significant countries in North Africa region in terms of FDI compared to other investing countries.

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