The Role of Transportation in Attracting FDI Inflows: Empirical Evidence from MENA Countries

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Journal of Business Research
Faculty of Commerce -Zagazig University
Volume 45 - Issue 1 January 2023
link: https://zcom.journals.ekb.eg/

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Abstract

The current study investigated transportation role in attracting FDI inflows to MENA region, from 2000 to 2020. An investigation is carried out focusing on the impact of different transportation modes (Air, maritime, and road) on attracting FDI. The analysis employed econometrics techniques based on the ARDL approach specified after data investigation. Two models are estimated using Cross sectional- error correction model CS-ECM and bias error correction Jack-knife model. The results found a positive significance of air and maritime transport at both short and long-run, also, positive significance of lagged FDI values that shows existence of dynamism in FDI, clarifying the importance of incremental gained information about host countries and investment opportunities. Further analysis of bi-variate causal relationships among transportation, market size and FDI inflows carried out using Dumitrescu and Hurlin (2012), which found bi-directional relationships between each of maritime, air, and road transport, as well as, market size, with FDI. The results show importance of transportation development as an integral part of FDI strategies for attracting FDI, particularly to MENA countries, which should be taken into consideration in future strategies and policies.

Keywords: Transportation, FDI, ARDL, MENA, Jack-knife.

1. Introduction

Economic literature discussed the economic importance of Foreign Direct Investment (FDI),as a major stimulus to economic growth. FDI solves problems of financial resources shortages and, facilitate availability of latest technologies, high skilled labor and modern management techniques which brought by foreign firms. The importance of FDI in stimulating economic growth shows the importance of studying main factors that attract FDI inflows to host countries.

Few economic authors studied transportation's importance in stimulating attractiveness of FDI inflows. Transportation development in host countries lowers business and production costs and improves the investment environment which should attract more FDI inflows. UNCTAD (2005) stressed on importance of infrastructure for attracting FDI inflows. World Bank "Investment Climate Assessments" shows that around 55% of respondents view electricity, transport, and communication asmajor obstacles to businesses in the MENA region.

According to the OECD MENA report, transport costs and time delays are among the main obstacles facing trade and investment in MENA countries, which shows the importance of studying transportation role in attracting FDI in MENA countries.

Most of the literature studies infrastructure rolein attracting FDI on a general level while few literature focus on the role of transportation precisely; also very few studies investigated the relationship between transportation and FDI in the MENA region which shows the importance of current study in filling this gap. The current study attempts to add to literature through focusing on

transportation role to FDI in MENA countries studying different transport modes' impact.

The current study main objective is investigating the role of transportation on increasing attractiveness of FDI inflows in MENA countries. The paper uses a deductive approach to derive economic hypotheses using logical deduction; the main hypothesis is the positive impact of transportation on FDI inflows based on economic literature. Then empirically test the hypothesis using econometric methods deploying panel CS-ECM and bias correction Jackknife approaches based on data investigation.

Two models will be estimated first model; will investigate the impact of transportation on FDI using maritime and air transport, in addition to market sizeas a location factor for 16 MENA countries during the period from 2000 to 2020. Second model; will further investigate transportation role using calculated index for each transport mode (maritime, air and road networks) for 11 MENA countries from 2005 till 2019 according to data availability. CS-ECM and bias error correction Jackknife models estimated for both models for all studied countries, then re-estimated as full list to investigate transportation role to FDI attractiveness at each country for further policy strategies. Further analysis will be carried using Dumitrescu and Hurlin (2012) bi- variate causality among studied variables.

The rest of paper is discussing FDI at MENA region through second section focusing on FDI in transportation, the third section discusses theoretical and literature background. The fourth section covers data description and explanation of the methodology, followed by empirical analysis results at fifth section, then ends with the conclusion and policy implications.

2. FDI and Transportation in MENA Region

According to UNCTAD (2022) analyzing main FDI determinants found that the main measures that are more favorable in 2021 to FDI are:

- Liberalization of investment: particularly in telecommunications, electricity, transportation, insurance and other manufacturing activities.
- Investment facilitation: as information availability, rules and regulations transparency, as well as, investors' administrative procedures.
- Development of local infrastructure: as transport facilities, and development of human capital.

According to the importance of transportation, transport projects (roads, bridges and ports) financed by FDI more than doubled in numbers from 2020 to 2021. Transport infrastructure projects are among the top 20 international projects grown from 2020 to 2021. Transport infrastructure projects in developing countries increased by 2% in value and increased in number of projects from 21 projects in 2020 to 50 in 2021. Mergers and Acquisitions in transportation reached $53 billion in 2021 from 7 billion in 2020, and in numbers increased from 224 projects to 324 projects.

Asan example, Nigeria introduced new transportation project including expansion of 884 km toll road which also, includes repairing and maintaining of that road. In Kenya, four new bridges project introduced to facilitate connection of remote areas. Also, transport projects included low-carbon mobility projects for the reduction of emissions, including mainly public transportation and mass transit systems such as trains, buses, and rail. This shows the importance of transportation projects which consider very important for long-run economic growth as they facilitate access to markets (UNCTAD, 2022).

According to OECD, some MENA countries implemented reforms in transport infrastructure over the past decade to lower investment barriers, as transportation is considered among the main obstacles to trade and investment in the region including "Qatar, Djibouti, Tunisia, Jordan, Algeria, Morocco, Egypt" (Nasser & Parsad, 2018).

This shows the importance of transportation development to FDI in the region, also, transport infrastructure was among the main projects of Sustainable Development Goals SDG financed by FDI in 2021. Egypt was the second largest host of FDI in Africa in 2021, focusing on transportation, for example, the Monorail project estimated cost is $2,321 million, for the construction of two monorails. Also, FDI inflows to Morocco increased by 52% to reach $2.2 billion, regarding transportation, FDI financed the project of 3,800 km transmission line cost $20 billion, and the line capacity is 3.6 GW, the project sponsored by Xlinks (UK).

United Arab Emirates (UAE) is among the largest FDI recipients of $20 billion. Among the largest projects announced in UAE is a solar energy project by "DHL Global Forwarding-Germany" and Total - France in Dubai for a cost of $633 million. Among the largest deals of MNEs was the purchase of "Syncreon NewCo - USA" by DP World (UAE), for $1.2 billion. The company purchased is a long-distance freight trucking services provider. Also, FDI inflows more than tripled in Saudi Arabia to reach $19 billion from $5.3 billion in 2020. In Turkey, FDI inflows rose by 60 % to reach $13 billion, and rise in new equity investment (UNCTAD, 2022).According to the mentioned FDI in transportation projects in MENA region further theoretical analysis needed to investigate the relationship between FDI and transportation in economic literature.

3. Literature Review

Countries can be merged into the global economy through international trade or FDI (Dunning & Lundan, 2008). FDI provide financial resources and technological advancement to host countries, and raises knowledge transfers to local firms (Araújo & Salerno, 2015), which contributes to domestic productivity and investments.

Globalization increases geographical spread which raises the importance of transportation in shipping inputs and final goods that stress on importance of host country's transportation capabilities and the importance of location choice to FDI (Ekici*et al.*, 2016). Economies must develop their infrastructure to attract FDI (Narula & Dunning, 2000).Transportation considers the main driver of host country towards attracting FDI (Halaszovich & Kinra, 2020).

Shatz & Venables (2000) categorized FDI according to reasons of FDI location into “horizontal” and “vertical". Horizontal is the expansion by firm through establishing new production facility in exporting countries to save in tariffs and transport costs, while vertical is relocation of production plants for saving production costs through gaining access to lower inputs and labor costs for maximizing profits. Transport infrastructure has more impact on FDI linked with vertical reason as firms will avoid countries with high transportation costs and low-quality transport services. The availability of well-developed transport system allows companies to obtain and ship their products faster and with lower costs (Erenberg, 1993).

According to the literature, there is theoretical support for importance of transport in raising FDI inflows due to transport’s impact on enhancing productivity and reducing cost, as will be discussed further.

Heckscher (1919) and Ohlin (1933) discussed cross-border trade which knownas "Heckscher-Ohlinmodel" explains that patterns of international trade between countries depend on availability of production factors. Countries with abundant capital endowments specialize in capital intensive goods while countries with abundant labor endowments specialize in labor intensive goods. Later literature by Hymer (1960) focused on firm investment decisions, exploring Multinational Enterprises (MNEs) investment decisions. Kindleberger (1969) and Caves (1971) using theories of transaction cost discussed how MNEs overcome imperfections of market through internationalizing economic activities. Vernon (1966) product life cycle model discussed product life goingin four stages starting by introduction phase, growth phase, maturity phase and ending with decline phase. Across the cycle phases, the location of sales and production changes, going from local market to international markets, showing the importance of location to business that is further studied by "Dunning's eclectic paradigm"(1977, 1979, 2000)which integrates trade theories with internationalization theories. It asserts that three main determinants affect FDI decisions which are; first; "ownership specific competitive advantages" in MNEs, second, "superior commercial benefits internally in a firm", and third determinant is "locational advantages" in the host country which is influenced by infrastructural facilities (Kaur *et al.,* 2016).

Empirical literature found that developed infrastructure including transport networks raises productivity and ensures higher long-run profitability. Well-developed transportation facilities include road networks, rail, andair; that stimulate FDI inflows to the country (Bellak*et al,* 2007; Cheng &Kwan, 2000),

as, lower transportation costs within the country, reduce costs of importing and exporting (Riedl, 2010).

Wheeler & Mody (1992) found positive significance of transport on investment using quality of transport among other factors as proxy of infrastructure in 42 countries. Erenburg (1993) argued that if the infrastructure is not well developed by government, private firms and MNEs will develop it by themselves which adds cost to firms. Thus, if MNEs move to a host country for lower labor costs they will choose countries with adequate transportation that facilitate faster and lower costs of supplying shipments due to low transportation costs. Loree & Guisinger (1995) examined variables that affect the decision of location choice of new U.S. FDI abroad, the results found positive significant effects of GDP percapita, and infrastructure.

Cheng & Kwan (2000) studied FDI determinants in a panel of 29 Chinese regions; the results showed that good infrastructure positively affects FDI. Kumar (2001) studied infrastructure's role in determining countries FDI inflows, using a composite index including transport infrastructure for 66 countries. Estimations results found that infrastructure contributes positively to FDI by MNEs.

Sekkat & Veganzones-Varoudakis (2004) analysis that includes eight MENA countries in 1990s, found that physical infrastructure strengthens attractiveness of countries' to FDI inflows. They found infrastructure gap at MENA countries in comparison to East Asia, which recommended expansion of physical infrastructure at MENA countries to attract FDI inflows. Asiedu (2006) found that infrastructure is among the main variables promoting FDI inflows in African countries, other variables aremarket size in host countries, natural

resources, inflation, and legal system. Goodspeed, *et al.* (2007) investigated impact of infrastructure, among other variables on FDI, of panel includes 53 economies. The analysis founda positive statistical significance of infrastructure. Yol & Teng (2009), studying Malaysia, found that if infrastructure improved by 1% FDI inflows will increase by almost 2.6%. Khadaroo & Seetanah (2010) studying 33 African countries found that transportation is the main infrastructure increasing the attractiveness of countries to FDI.

Assuncao*et al.* (2011) categorized variables affecting FDI into three categories; first; location as market size, and infrastructure, second; trade factors as trade openness and factor endowments, third; institutional factors including factors related to political stability and corruption. Similarly, Akpan, *et al.*(2014) examined FDI determinants at nine economies, found that market size, trade openness, and infrastructure, are significant variables. Ahmad *et al.*(2015) investigated infrastructure impact on FDI in Malaysia using the ARDL approach. Theresults found that infrastructure has a significant positive impact on FDI (Shahbaz*et al,* 2021).

Kaur *et al.*, (2016) investigated main infrastructure determinants affecting FDI inflows to India and found railway and road network have positive significant impact on FDI. The study argued that; lack of transport facilities, telecommunication penetration, and electricity coverage increase business costs and reduce FDI. Halaszovich & Kinra (2020)found that national transportation positively affects trade and FDI, as higher developed transportation able to lower transport costs. Shahbaz*et al.* (2021) stated that transportation adds to FDI in France. Based on the above literature, the current study will investigate transportation role in attracting FDI inflows to MENA region examining the impact of each transport mode and market size as a location factor.

4. Empirical Analysis Methodology

To empirically investigate impact of transportation on FDI inflows to MENA economies, econometric methods were employed to estimate two models based on data investigation**.**

4.1 Data and Variables

The role of transportation, in attracting FDI inflows among other factors as local market size, economic openness, and natural resources examined in economic literatureas studies of "Wheeler & Mody, 1992; Chen & Kwan, 2000; Asiedu, 2002; Quazi,2005".The current study main hypothesis is the positive impact of transportation in attracting more FDI inflows, which will beinvestigatedin MENA region in frame of location factors including air, maritime and road transport, as well as, market size.

Table (1) Variables Definitions

Indicator	Definition	Source
FDI	Foreign direct investment net inflows as percentage of GDP	WB
LNCONT	Container port Traffic (TEU: 20 foot)	WB
LNAIRC	Registered air carrier departures worldwide	WB
LNGDPC	GDP per Capita (Constant)	WB
LNTR1	**Air Transportation Index**	
	Number of Aircrafts "sum of arrivals and departures"	ESCWA
	Number of air transport passengers	ESCWA
	Air cargo and mail transported Goods Loaded & Unloaded	ESCWA
LNTR2	**Maritime Transportation Index**	
	Gross weight of sea freight Goods Unloaded	ESCWA
	Number of Sea Vessels "sum of arrivals and departures"	ESCWA
	Gross weight of sea freight Goods Loaded	ESCWA
LNTR3	**Road Transportation Index**	
	Road Network Length	ESCWA
	Number of Road Accidents	ESCWA

Source: collected by author from World Bank (WB) and ESCWA

4.1.1 Maritime and Air Transport:

transport variables are central variables of current study, which studied in number of papers in economic literatureas" Canning, 1998; Canning & Bennathan, 2000" which analyzed transport factors in attracting FDI. The current study use container port traffic as proxy of maritime transport, and air carriers as proxy of air transport both used as explanatory variables for investigating the impact of transport on FDI inflows for 16 MENA countries from 2000 till 2020, the data retrieved from World Bank.

4.1.2 Market Size:

host country's local market sizeconsiders an indicator for potential demand on host country, as studied by economic literature as Scaperlanda & Mauer (1969) which found positive impact of market size on FDI. Also, importance of market size to FDI discussed in studies as "Kravis &Lipsey, 1982; Schneider & Frey, 1985; Tsai, 1994; Loree & Guisinger, 1995; Wei, 2000"(Khadaroo & Seetanah, 2010). The current study use "GDP per capita" as proxy of market size, since it considers indicator of market demand of foreign firms' output, then the expected sign is positive, it also measures capital abundance, and investment environment.

4.1.3 Transport Indices

The current study calculated index for each transport mode for 11 MENA countries for the period from 2005 till 2019 according to data availability for examining the impact of each transport mode on FDI inflows. First index is measuring air transport, second is measuring maritime transport and third is measuring road transport, including indicators mentioned at table (1).

For index calculation based on Yones (2023) first; employing formula (1) to ensure that the resulted d_i value will be in range of 0 to 1 the higher value means higher achievement.

$$d_i=(A_i-Min_i)/(Max_i-Min_i) \quad (1)$$

A_i = "Actual value of dimension i"

Max_i = "Maximum value of dimension i"

Min_i = "Minimum value of dimension i"

Then calculating each index D_i over the studied period using the simple average of d_i for the available years using formula (2) n is number of years

$$D_i = \sum d_i/n \quad (2)$$

4.2 Pre- Estimation Tests

First, panel data has to be tested for crosssectional dependence CD as existence of strong cross sectional dependence means that if a country faced a shock, it will be transmitted to other countries. In case of existence of CD the subsequent tests and estimation must take in considerations existence of CD. The current analysis used Pesaran (2015) CD test of each model and also tested each variable, for null hypothesis "errors are weakly cross-sectional dependent". Second, panel data further test for biasness which could exist specially in case of small data samples. The data tested biasness using bias adjusted LM test of Pesaran *et al.* (2008) employed as its valid if N>T or T>N. In case of existence of biasness, estimation approach employed must correct biasness as it will be discussed.

Third, panel data must be tested for heterogeneity, in case of existence of heterogeneous slopes estimation approach used must take in consideration or allow for heterogeneous slopes. The current data tested using Pesaran

&Yamagata (2008) slopes homogeneity test based on the dispersion of "individual weighted slope" testing null hypothesis "slope coefficients are homogenous" .In case of the existence of bias in a dynamic heterogeneous panel bias correction method is required.

Fourth, unit root test has to be employed to make sure that variables are stationary at level I (0), or at first difference I(1). In case of the existence of CD then second-generation unit root test used as CIPS test by Pesaran (2007), which considers CD combining ADF "Augmented Dickey Fuller" and IPS "Im and Pesaran and Shin".

Fifth, panel has to be tested for co integration to specify the estimation approach. In case of linear combination among variables there is possibility for testing long run equilibrium. In case of the existence of CD it's recommended to use four cointegration tests by Wasteland (2007) which based on ECM "error correction model" considering inter-individual dependence, also, the study employed Pedroni (2004) test for further investigation.

4.3 Model Specification

Chudik & Pesaran (2015b) proposed CCEMG estimator "Common Correlated Effects- Mean Group" for heterogeneous panel dynamic models, when dependent variable (DV) explained by its lagged values as ARDL panel models "Augmented Autoregressive Distributed Lag"(Chudik & Pesaran, 2015b).

In the dynamic model lagged (DV) is not strictly exogenous, which lead to a problem that the estimator becomes inconsistent, this can be solved if floor of $p_T = [\sqrt[3]{T}\ ]$ lags for Cross-sectional (CS) averages added for DV and exogenous variable.

Cross-sectional augmented regression assuming ARDL of same lag orders of y_{it} and x_{it} as follow:

$$y_{it} = \alpha_i + \emptyset_i y_{i,t-1} + \beta'_{0i} x_{it} + \beta'_{1i} x_{i,t-1} + \sum_{\ell=0}^{p_T} \delta'_{i\ell} \bar{Z}_{t-\ell} + e_{it} \quad (3)$$

i= 1, 2,…., N, t= 1,2,…, T p_T is number of lags, $\bar{Z}_t = (\bar{y}_{t-1}, \bar{X}_t)$,

Mean Group (MG) estimator of $E(\pi_i) = (\emptyset, \beta'_0, \beta'_1)$ is

$$\hat{\pi}_{MG} = \frac{1}{N} \sum_{i-1}^{N} \hat{\pi}_i (4)$$

Consistency requirements for $\hat{\pi}_{MG}$and $\hat{\pi}_i$ that time T and number of countries N grow together to infinity, also, CS lags number are restricted for maintaining degrees of freedom numbers. Based on these MG estimators in static and dynamic data depend on large T and N, at small sample size bias problem may appear (Ditzen, 2018). In case of the existence of biasin a dynamic heterogeneous panel bias correction method is required. Chudik & Pesaran (2015b) investigated two methods correct biasness; "half-panel jackknife" JK by Dhaene & Jockmans (2012) and "recursive mean adjustment" by So & Shin (1999) and found that Jackknife is more effective. JK bias corrected estimators constructed as:

$$\tilde{\pi}_{MG} = 2\, \hat{\pi}_{MG} - \tfrac{1}{2} (\hat{\pi}^a_{MG} + \hat{\pi}^b_{MG}) \quad (5)$$

Where, $\hat{\pi}^a_{MG}$denotes CCEMG estimator for first half of studied time period, over the period t= 1, 2,…, [T/2], and $\hat{\pi}^b_{MG}$ is the CCEMG estimators computed using observations of period t = [T/2] + 1, [T/2] +2, …, T. Where, [T/2] is the integer part of T/2 (Chudik & Pesaran, 2015b).

Based on CCEMG estimator for heterogeneous dynamic panel model proposed by Chudik & Pesaran (2015b)the current study employCS-ECM "error correction model". This method obtains estimates of MG in two successive

steps: Firstly, estimate Cross-sectional (CS) coefficients units allowing for heterogeneous slopes. Then, averaging unit-specific estimates across studied groups with controlling CD through addition of CS averages and lags as proposed by Pesaran (2006), Chudik & Pesaran (2015b), implies accounting for unobserved heterogeneity across units. Also, method tests for CD in error terms as proposed by Chudik & Pesaran (2015a), and it allows correction for "small-sample time-series bias" through employing "half-panel" JK method proposed by Chudik & Pesaran (2015b) (Ditzen, 2018).

Estimating the CCEMG dynamic model as CS-ECMmodel as proposed by Ditzen (2018) is

$$\Delta y_{i,t} = \emptyset_i \left[y_{i,t-1} - \theta_i x_{i,t-1} \right] - \beta_i \Delta x_{i,t} + \sum_{\ell=0}^{PT} \gamma_{i,\ell} \bar{Z}_{i,t} + \mu_{i,t} \quad (6)$$

The estimation run as

$$\Delta y_{i,t} = \emptyset_i y_{i,t-1} + \varphi_i x_{i,t-1} + \omega_i \Delta x_{i,t} + \sum_{\ell=0}^{PT} \gamma_{i,\ell} \bar{z}_{i,t} + \mu_{i,t} \quad (7)$$

Long run coefficient estimate as $\widehat{\theta_\iota} = -\frac{\widehat{\varphi_i}}{\widehat{\phi_i}}$

The study estimates two models using the CCEMG estimator for heterogeneous dynamic panel using CS- ECM then re-estimating with bias correction jackknife method.

***First Model*:** investigate location factors' impact on FDI inflows using containers as proxy of maritime transport and air carrier as proxy of air transport and GDP per capita as proxy of market size, for 16 MENA countries from 2000 to 2020.

$$\text{FDI}_{it} = \phi_i \left[FDI_{i,t-1} - \theta_i x_{i,t-1} \right] - \beta_i \Delta x_{i,t} + \sum_{l=0}^{PT} \gamma_{i,} \bar{Z}_{i,t} + \mu_{i,t} \quad (8)$$

With, $\bar{Z} = (\overline{FDI}_t , \bar{X}_t)$ and $X_{i,t} = (LNCONT_{it} , LNAIRC_{it} , LNGDPC_{it})$

***Second Model*:** investigate the impact of transportation on FDI using three transportation modes; air, maritime and road transport. Three indices are calculated as mentioned earlier, those indices calculated using ECWA data for the period from 2005 to 2019 the model include11MENA countries.

$$\text{FDI}_{it} = \phi_i\left[FDI_{i,t-1} - \theta_i x_{i,t-1}\right] - \beta_i \Delta x_{i,t} + \sum_{l=0}^{PT} \gamma_{i,l} \bar{Z}_{i,t} + \mu_{i,t} \quad (9)$$

With, $\bar{Z} = (\Delta\overline{FDI}_t\,, \bar{X}_t\,)$ and $X_{it} = (LNTR1_{it}\,,\ LNTR2_{it}\,, LNTR3_{it}\,)$

4.4 Bi-Variate Causality

Further analysis of bi-variate causality is carried using Dumitrescu & Hurlin (2012) "Granger non-causality test" which is appropriate as it takes account of country's heterogeneity not as the Granger causality test which assumes that all coefficients are similar for all studied countries.

As stated by Dahmani *et al.* (2021) "The test estimates individual Granger causality for each cross section, and calculates the average of the individual tests considering a statistical significance (*W* statistic) and a standardized statistic *W*, called the *Z* statistic".

5. Empirical Results

5.1 Pre- Estimation Tests Results

Results of Pesaran (2015) CD test of both models as shown in table (2) reject null hypothesis showing the existence of strong CD between countries. This denotes that if a country faced a shock, it will be transmitted to other countries. Also, the CD test was carried out for all variables as shown in table (3) denoting the existence of CD for all variables. Since the literature stressed on the importance of checking for biasness in small time series data, the panels tested for biasness using bias adjusted LM test of Pesaran *et al.* (2008) results as shown in table (2) shows that panels have bias estimators which need to be

considered by using bias correction technique. Slope homogeneity Pesaran & Yamagata (2008) test results for both models shows the existence of heterogeneity which means that models' coefficients are heterogeneous and their slopes differs across countries which has to be considered by applying heterogeneous panel methods.

Table (2) Pre-Estimation Tests Results

Test	Model 1		Model 2	
	Stat.	**P.**	**Stat.**	**P.**
LM_{adj}	15.48	0.000	3.819	0.001
Pesaran CD	14.67	0.000	10.93	0.000
Δ	4.840	0.000	3.184	0.000
Δ_{adj}	5.545	0.000	4.110	0.000

Source: Estimated by Author

Based on CD test results Pesaran (2007) second-generation unit root test CIPS employed as it considers CD.CIPS results as shown in table (3) shows that FDI and LNAIRCare stationary at level I(0), and the other variables are stationary at first difference I(1).

Table (3) CIPS Unit Root Test and Pesaran (2015) CD Test

Variable	CIPS		Result	CD
	level	1st diff		
LNGDPC	-2.077	-3.307	I(1)	0.000
FDI	-4.115		I(0)	0.000
LNAIRC	-2.257		I(0)	0.000
LNCONT	-2.460	-3.955	I(1)	0.000
LNTR1	-1.792	-3.211	I(1)	0.000
LNTR2	- 1.868	-3.245	I(1)	0.009
LNTR3	-2.089	-3.331	I(1)	0.000

Source: Estimated by Author. Note: "Ln" stands for logarithm

Based on existence of CD among variables in both models Westerlund (2007) co-integration test employed which consider heterogeneous slopes and CD. The results of both tests as shown at table (4) shows rejection of "null hypothesis of non-co-integration", which shows long-run co integration among variables in both models. Also, Pedroni (2004) test results showing the rejection of null of hypothesis in both models. Therefore, long run equilibrium relationships need to be estimated among models' variables.

Table (4) Co-integration Tests Results

Test	**Model 1**	**Model 2**
Pedroni Test for Co-Integration		
Modified PP "Phillips-Perron"	0.1608	0.0018
PP "Phillips-Perron"	0.0001	0.0010
ADF "Unadjusted Dickey-Fuller"	0.0001	0.0067
Westerlund ECM panel co-integration test		
Gt	0.000	0.000
Ga	0.425	0.999
Pt	0.000	0.000
Pa	0.012	0.977

Source: Estimated by Author

5.2 Estimation Results

Preliminary analysis found CD at both examined models and slope heterogeneity which shows that CS-ECM based on ARDL approach is appropriate for the current analysis due to its robustness under CD and different stationary orders. Also, the preliminary analysis found biasness in panels which shows the appropriateness of bias-corrected half -panel Jackknife (JK) methods based on ARDL technique. As shown from models' estimation results at table (5) CD test results found to accept null hypothesis of weak CD at both models after estimation using the employed techniques, which confirm on their appropriateness.

Table (5) Models Mean Group Estimation

	CS-ECM		Jack- Knife	
Variable	**Coef.**	**Prob.**	**Coef.**	**Prob.**
Model 1				
ECT	-1.687	0.001	-1.657946	0.029
Short Run				
LD.FDI	.4519	0.030	2.609	0.009
D. LNGDPC	26.65	0.115	13.000	0.499
LD.LNAIRCL	11.39	0.006	16.941	0.022
LD. LNCONT	2.640	0.167	18.196	0.002
Long run				
LNGDPC	-123.9	0.322	-11.299	0.644
LNAIRC	-9.936	0.591	11.650	0.095
LNCONT	27.11	0.098	7.663	0.060
CD Statistic	0.72	0.4734	1.51	0.1322
Model 2				
ECT	-1.08581	0.000	-2.171	0.000
Short Run				
LD.FDI	.565	0.001	4.357	0.165
D.LNTR1	1.367	0.277	5.467	0.547
D.LNTR2	8078.	0.504	-.4179	0.942
D.LNTR3	1.865	0.159	3.731	0.159
Long run				
LNTR1	4.763	0.082	4.763	0.082
LNTR2	3.714	0.027	3.714	0.027
LNTR3	1.087-	0.588	-1.087	0.588
CD Statistic	-1.34	0.1808	-0.41	0.6794

Source: Estimated by Author

5.2.1 Mean Group Estimation Results

First Model Mean Group Estimation: first model estimation results; "Error Correction Term" ECT of CS-ECM is negative significant at 1% confidence level, and ECT of Jackknife is significant at 5% level, showing existence oflong-runrelationshipamong FDI, transportation and GDP per Capita. Equilibrium will be restored in long run with an adjustment rate of 168% according to CS-ECM and 165% according to JK estimation.

At short run, lagged FDI values have positive significant impact on FDI at both CS-ECM and Jackknife models estimations. CS-ECM estimation shows significance of transport in increasing attractiveness of FDI inflows to MENA countries as air transport found to be positive significant at short run and maritime transport found to be positive significant at long run. Jackknife estimation shows significance of both air and maritime transport at both short and long run analysis, as both are positively significant in jackknife estimation after bias correction.

Second Model Mean Group Estimation: Second model estimation results show that "Error Correction Term" ECT of CS-ECM and Jackknife are negative as expected and significant at 1% confidence level, which shows long run relationship between FDI inflows, and transportation. Equilibrium will be restored at long run with adjustment rate of 108% according to CS-ECM and 217% according to JK estimation.

According to CS-ECM model estimation, only lagged FDI has positive significant impact on FDI at short run. While at long run both air transport and maritime transport are positively significant. Jackknife model estimation shows significance of both air and maritime transport at long-run estimation only, as both are positively statistically significant, which shows that impact of transport increases with time showing the importance of transport development over time.

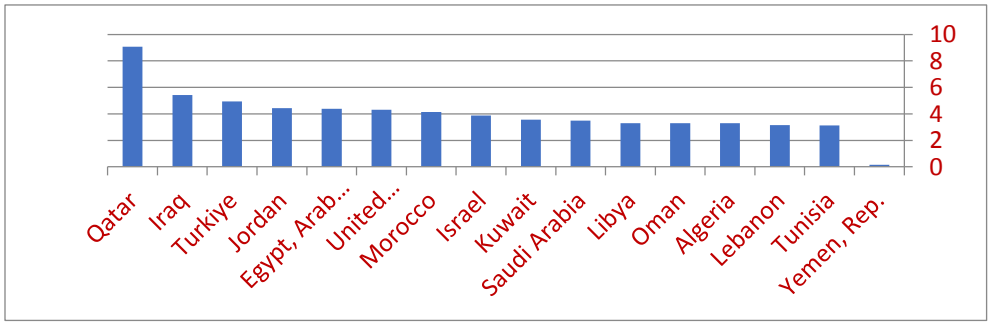
Results of Both models confirm on positive significance of air transport and maritime transport on FDI inflows in MENA countries which shows the importance of location factors precisely transport on increasing attractiveness of countries to attract more FDI. That goes with "Dunning's eclectic paradigm" which stated that "locational advantages" at host country are among main FDI determinants, and Teixeira (2011) categorized location as main FDI determinant.

Also, the importance of transportation to FDI inflows goes with Shatz & Venables (2000) which stressed on transport infrastructure impact on FDI as firms will avoid countries with high transportation costs and low-quality transport services. The results go with empirical literature as; Wheeler & Mody (1992), Kumar (2001) shows the importance of transport infrastructure for FDI. Sekkat & Veganzones-Varoudakis (2004) recommended that MENA countries should expand their physical infrastructure to attract FDI. Khadaroo & Seetanah (2010) found that transportation is the main infrastructure raising attractiveness to FDI. Kaur *et al.*, (2016) and Halaszovich & Kinra (2020) found that transportation positively affect FDI.

5.2.2 Full Countries List Estimation Results

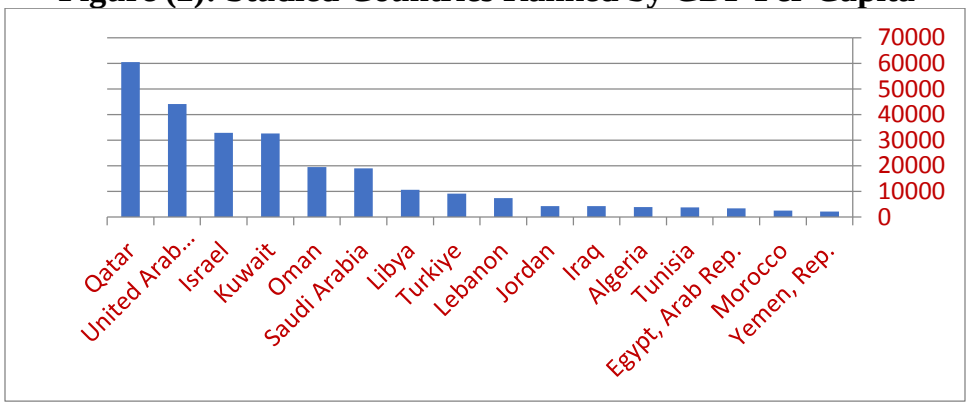
Further investigation of transportation impact on FDI inflows carried for each country using same estimation technique. Studied countries present different levels of GDP economic growth, as shown from figure (1)which present countries ranked according to average GDP growth rate of studied period from 2000 to 2020. Also, the countries present different income levels as shown from figure (2) which presents studied countries ranked according to average real GDP per Capita of studied period.

Figure (1): Studied Countries Ranked by GDP Growth Rate



Source: by author according to World Bank data

Figure (2): Studied Countries Ranked by GDP Per Capita



Source: by author according to World Bank data

First Model Full List CS-ECM results: As shown from full countries list estimation results in table (6), at the short run, lagged values of FDI inflows positively significant at 12 countries showing the importance of collected knowledge about FDI inflows in last period to attract new FDI. GDPC as proxy for market size is statistically positive significant in nine countries; Algeria, Egypt, Libya, Oman, Saudi Arabia, Tunisia, Turkiye, UAE and Yemen which shows that market size is an important FDI determinant in those countries which shows market size importance in increasing FDI inflows with different levels of income and economic growth. Air transport found to be positively significant at short run, at all studied countries except; Jordan, Kuwait, Morocco, Israel and at long run as well, in addition to Iraq, Qatar and Yemen. Maritime Transport found to be positively significant at short run, at Algeria, Lebanon, Libya, Oman, Saudi Arabia, Tunisia, Turkiye and Yemen. While at long run it's significant in ten countries and insignificant only in Iraq, Israel, Jordan, Kuwait, Lebanon, and Saudi Arabia.

According to CS-ECM, transporting important FDI determinant at most countries, showing that air transport is the most significant at short run. At long run, air and maritime transport are significant in almost the same number of

countries with one more country according to maritime transport. Showing that maritime and air transport are important factors for attracting FDI to countries with different levels of income and growth levels.

First Model Full List Jackknife results: As shown in table (6) Jackknife full countries list estimation results shows that at the short run, lagged values of FDI inflows positively significant at 12 countries. Market size using GDPC is statistically positively significant in all studied countries except; Jordan, Morocco, Oman, Tunisia and Turkiye. Air transport is significant in all countries except only three countries, Jordan, Morocco and Turkiye, Also, Maritime transport significant in all countries except three which are; Kuwait, Israel and Qatar.

At the long run, market size using GDPC is statistically positively significant in all studied countries except only three countries; Algeria, Morocco, and Yemen. Air transport is significant in fewer countries at long run, its insignificant in six countries; Algeria, Egypt, Israel, Jordan, Morocco, and Qatar. While, maritime transport is significant in seven countries only, Algeria, Iraq, Jordan, Lebanon, Qatar, Tunisia and Turkiye.

According to Jackknife's results, air and maritime transport are significant at more countries at the short run while the market size is significant at more countries at long run which shows importance of location factors in attracting FDI inflows to MENA countries. According to the full list estimation, using both CS-ECM and Jackknife; air transport was found to be insignificant in Jordan and Morocco at both short and long run which requires more development of air transport. Maritime transport found to be insignificant in Israel at both short and long run which requires more development of maritime transport.

Table (6) First Model Full List Estimation

CS - ECM		Short Run (1,0,1,1)								Long Run					
		FDI_{t-1}		LNGDPC		LNAIRC		LNCONT		LNGDPC		LNAIRC		LNCONT	
		Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P
1	Algeria	1.542	0.000	34.51	0.000	2.248	0.000	3.00	0.000	18.92	0.000	2.200	0.000	.3247	0.000
2	Egypt	.6169	0.012	192.3	0.052	14.29	0.014	.4887	0.801	18.94	0.147	13.50	0.050	3.368	0.041
3	Iraq	.6017	0.085	2.050	0.797	17.58	0.001	10.98	0.154	-22.12	0.873	56.47	0.417	10.56	0.862
4	Israel	.6684	0.380	-13.13	0.838	-8.228	0.534	-4.57	0.437	21.25	0.715	-2177	0.774	3.924	0.629
5	Jordan	.0034	0.996	1.661	0.988	-18.95	0.729	-6.61	0.609	-16.55	0.864	13.03	0.726	-31.1	0.438
6	Kuwait	1.196	0.028	-8.896	0.399	.5559	0.554	8.876	0.388	-.3649	0.938	-0558	0.945	-7.94	0.336
7	Lebanon	.2653	0.042	-11.30	0.151	2.334	0.000	1.766	0.024	8.904	0.001	2.248	0.009	-.123	0.737
8	Libya	.3382	0.000	10.40	0.000	1.103	0.000	1.584	0.000	7.988	0.000	12.68	0.000	4.677	0.000
9	Morocco	1.323	0.243	38.21	0.338	1.456	0.868	-9.17	0.319	21.06	0.069	-1250	0.955	1.393	0.003
10	Oman	.5333	0.000	66.52	0.000	8.073	0.000	3.822	0.000	189.1	0.000	54.73	0.000	6.082	0.000
11	Qatar	.9975	0.056	-15.50	0.478	27.61	0.096	11.32	0.163	-333.9	0.347	-8.964	0.890	132.8	0.002
12	KSA	.4433	0.000	6.322	0.047	47.34	0.000	.859	0.000	1960.7	0.000	269.5	0.000	10.34	0.384
13	Tunisia	1.882	0.000	174.4	0.000	12.24	0.000	1.612	0.013	8.046	0.000	.3780	0.000	1.522	0.000
14	Turkiye	.0581	0.000	8.320	0.000	2.017	0.000	.2850	0.001	22.68	0.000	26.89	0.000	7.463	0.000
15	UAE	1.204	0.398	66.23	0.079	44.75	0.000	16.28	0.216	104.6	0.095	59.66	0.000	65.56	0.000
16	yemen	.4965	0.000	20.01	0.008	5.072	0.000	14.60	0.000	70.04	0.022	2.385	0.729	229.9	0.000
Half-Panel Jackknife		$LNFDI_{t-1}$		LNGDPC		LNAIRC		LNCONT		LNGDPC		LNAIRC		LNCONT	
		Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P
1	Algeria	2.540	0.000	32.64	0.000	3.292	0.000	4.585	0.000	3.847	0.946	4.026	0.599	7.673	0.007
2	Egypt	1.297	0.000	52.74	0.056	4.484	0.023	6.309	0.000	9.995	0.001	-2.44	0.198	1.026	0.151
3	Iraq	1.555	0.000	85.08	0.000	57.58	0.000	56.54	0.000	14.82	0.001	27.33	0.000	12.51	0.000
4	Israel	5.140	0.000	113.6	0.000	12.82	0.002	-7.57	0.127	41.94	0.000	-1.62	0.442	2.102	0.398
5	Jordan	.5194	0.002	9.930	0.796	1.070	0.845	46.51	0.000	31.52	0.004	3.637	0.367	30.74	0.000
6	Kuwait	6.042	0.000	3.689	0.006	2.957	0.000	-1.40	0.421	56.16	0.000	12.32	0.000	21.12	0.000
7	Lebanon	10.82	0.000	45.78	0.014	10.33	0.000	9.381	0.000	26.33	0.015	14.54	0.000	-.515	0.743
8	Libya	.9186	0.002	31.21	0.000	80.94	0.000	15.04	0.000	1.179	0.049	49.68	0.000	-.539	0.679
9	Morocco	-.0048	0.984	.0557	0.998	-1.17	0.677	8.478	0.001	-16.7	0.276	.0785	0.974	-.855	0.631
10	Oman	.0717	0.784	10.09	0.478	14.77	0.048	9.191	0.033	99.92	0.002	35.52	0.000	3.889	0.356
11	Qatar	1.330	0.000	57.10	0.010	21.51	0.000	-2.60	0.564	384.3	0.003	-5.96	0.746	29.37	0.008
12	KSA	-.0662	0.826	51.47	0.000	64.18	0.000	8.188	0.000	9.207	0.027	10.91	0.000	.5469	0.391
13	Tunisia	-.1171	0.669	-5.90	0.900	35.68	0.000	58.37	0.000	52.57	0.029	62.02	0.000	16.19	0.010
14	Turkiye	6.358	0.000	-9.14	0.128	1.901	0.362	4.377	0.091	61.57	0.045	67.09	0.000	46.50	0.002
15	UAE	10.80	0.000	126.8	0.000	37.22	0.000	63.37	0.000	1.379	0.071	6.368	0.000	.1867	0.859
16	Yemen	.8204	0.020	204.5	0.000	5.247	0.050	14.74	0.015	19.57	0.90	20.27	0.000	-4.70	0.221

Source: Estimated by Author

Second Model Full List Estimation Results

Full list has been estimated using both CS-ECM and bias correction Jackknife techniques. As shown at table (7) at the short run, the first transport dimensions measuring air transport were found to be statistically positive significant in all studied countries except, Egypt and Oman. The second transport dimension measuring maritime transport was found to be statistically positive significant at all studied countries except Egypt. While the third dimension measuring road transport is significant infewer countries in comparison to air and maritime transport, it's statistically positive significant at all countries except four countries; Egypt, Jordan, Lebanon and Morocco.

At the long run, air transport were found to be statistically positive significant at all studied countries except, Egypt, while maritime transport were found to be statistically positive significant at all studied countries except Egypt, Morocco, and Tunisia, while road transport is statistically positive significant at all studied countries except three countries; Egypt, Kuwait, and Morocco.

Results of the second model show that Egypt needs further development of road networks, also, maritime and air transport as the first model results also show insignificance in long run jackknife results; also, Morocco needs further development of road network.

The results confirm the first model results that transportation is an important factor in attracting FDI inflows to MENA countries of all types of transportation (air, maritime and road transport), which goes with Sekkat & Veganzones-Varoudakis (2004) which recommended that MENA countries should expand their physical infrastructure to attract FDI.

Table (7) Second Model Full List Estimation

CS-ECM		Short Run (1,0,0,0)								Long Run					
		$LNFDI_{t-1}$		LNTR1		LNTR2		LNTR3		LNTR1		LNTR2		LNTR3	
		Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P
1	Algeria	-.0064	0.987	-.1493	0.638	-2.144	0.627	1.733	0.081	.3787	0.005	2.720	0.312	-1.508	0.100
2	Egypt	.5106	0.029	.9751	0.824	-4.286	0.482	1.603	0.590	-2.780	0.722	1.513	0.892	-2.579	0.498
3	Iraq	.0942	0.672	.3994	0.000	1.246	0.000	2.418	0.000	.8082	0.000	-.5204	0.334	5.800	0.000
4	Jordan	.1211	0.055	4.136	0.001	-1.114	0.480	.2171	0.510	25.06	0.000	13.67	0.089	-1.216	0.358
5	Kuwait	-1.022	0.247	2.012	0.007	-.2713	0.681	1.726	0.012	1.876	0.051	1.234	0.167	-.0532	0.911
6	Lebanon	-.5520	0.113	1.064	0.304	-1.683	0.237	-1.32	0.572	8.578	0.015	4.940	0.395	15.77	0.007
7	Morocco	.6317	0.180	-5.451	0.143	6.595	0.132	-.930	0.598	4.690	0.329	-5.955	0.587	-.7409	0.766
8	Oman	-.3518	0.621	.5983	0.607	4.819	0.000	10.22	0.000	-2.350	0.210	11.50	0.000	9.543	0.000
9	Qatar	-.2631	0.663	11.76	0.150	-7.109	0.251	9.803	0.161	17.71	0.073	7.658	0.151	-8.155	0.145
10	Tunisia	.5000	0.046	-1.264	0.353	.2304	0.000	-2.66	0.237	2.219	0.184	.345	0.950	1.806	0.199
11	Yemen	.1105	0.571	.9582	0.035	4.708	0.159	2.543	0.000	3.510	0.000	3.743	0.000	1.098	0.101
Half-Panel Jackknife		$LNFDI_{t-1}$		LNTR1		LNTR2		LNTR33		LNTR1		LNTR2		LNTR3	
		Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P	Coef.	P
1	Algeria	-3.118	0.291	2.907	0.000	10.95	0.013	3.466	0.000	3.757	0.000	2.720	0.043	1.508	0.001
2	Egypt	.3082	0.364	-5.327	0.225	-5.380	0.377	3.206	0.281	-2.780	0.476	1.513	0.787	-2.757	0.175
3	Iraq	-.3345	0.643	.3587	0.000	4.256	0.000	4.837	0.000	.8082	0.000	.5204	0.054	5.800	0.000
4	Jordan	1.123	0.000	7.920	0.000	21.64	0.000	.4342	0.188	25.06	0.000	13.67	0.001	1.1216	0.066
5	Kuwait	-.1582	0.492	6.109	0.000	2.690	0.000	3.453	0.000	1.876	0.000	1.234	0.006	-.0532	0.822
6	Lebanon	4.839	0.000	5.897	0.000	40.26	0.000	-2.64	0.258	8.578	0.000	4.940	0.089	15.77	0.000
7	Morocco	2.949	0.027	16.383	0.000	22.50	0.000	-1.86	0.292	4.690	0.051	-5.955	0.277	-.7409	0.552
8	Oman	3.448	0.000	-.9204	0.429	3.185	0.016	20.45	0.000	2.350	0.012	11.50	0.000	9.543	0.000
9	Qatar	.8580	0.287	92.548	0.000	10.64	0.086	19.60	0.005	17.71	0.000	7.658	0.004	8.155	0.004
10	Tunisia	31.50	0.000	11.17	0.000	13.47	0.032	5.324	0.018	2.291	0.008	.3455	0.901	1.806	0.010
11	Yemen	7.140	0.000	15.97	0.000	22.27	0.000	5.086	0.000	3.510	0.000	3.743	0.000	1.098	0.001

Source: Estimated by Author

5.3 Bi-Variate Causality Results

Table (8) shows the results of Dumitrescu and Hurlin (2012) Granger non-causality test. Causality results show the existence of five Bi-directional relationships between LNGDPC ↔FDI, LNCONT ↔ FDI, FDI ↔LNTR1, FDI ↔LNTR2, FDI ↔LNTR3 and one unidirectional relationship between LNAIRC → FDI, this goes with estimation results. The results confirm the mutual relationship between location factors using transportation and market size and FDI inflows in MENA countries.

The results shows impact of all transport modes on FDI inflows also shows the important impact of FDI inflows for further development of transportation, as well as, the importance of markets size using GDP per capita in attracting FDI inflows and importance of FDI to further increase of GDP per capita at host countries.

Table (8) Panel Causality Results

Causality	Z bar	P-value
LNGDPC →FDI	10.3908	0.0000
FDI → LNGDPC	7.8443	0.0000
LNAIRC → FDI	41.8899	0.0000
FDI → LNAIRC	-0.3510	0.7256
LNCONT → FDI	13.7299	0.0000
FDI → LNCONT	3.5457	0.0004
LNTR1 →FDI	4.2473	0.0000
FDI → LNTR1	2.9288	0.0034
LNTR2 →FDI	3.4067	0.0007
FDI → LNTR2	3.6240	0.0003
LNTR3 →FDI	13.7688	0.0000
FDI → LNTR3	1.7574	0.0788

Source: Estimated by Author

Conclusion and Policy Implications

The current paper investigated role of location factors focusing on market size and transportation in raising the attractiveness of FDI inflows to host countries. Investigation based on a sample of 16MENA countries that differ in terms of income levels and economic growth rates carried out from 2000 to 2020. Further investigation was carried out focusing on the impact of different transportation modes (Air, maritime, and road) on attracting FDI, using the calculated index of each transport mode for 11 MENA countries from 2005 till 2019 according to data availability.

Empirical results found a co-integration between FDI and independent variables. This implies that development in transportation in MENA countries can raise FDI inflows. After panel data tests, the analysis employed econometrics techniques based on the ARDL model specified after data investigation which found cross dependence, heterogeneity and biasness which required employing estimation techniques to solve those problems. Both models were estimated using CS-ECM and bias correction Jackknife Mean Group estimations then analyzing all countries' lists to study impact of independent variables on FDI inflows at each country.

First model results found positive significance of air transport and maritime transport on FDI inflows at both short and long run analysis based on Jackknife estimation, while based on CS-ECM air transport has a positive significance at short-run and maritime transport has a positive significant impact atlong-run. Second model estimation found positive significance of air and maritime transport at long run only based on both CS-ECM and Jackknife estimations, indicating that the development of transportation raises its effect with time.

Also, the positive significance of lagged FDI (dependent variable) shows existence of dynamism and endogeneity in FDI, which, shows the importance of incremental gained information about host countries and investment opportunities in increasing FDI inflows.

Full country list estimations found that Egypt needs further development of road networks based on the second model results, also, maritime and air transport needs further development to attract more FDI inflows based on the insignificance of both modes in the second model and first model results which

also, found insignificance at long run jackknife results, also, Morocco needs further development of road network.

In analyzing feedback effects among studied variables, bi-variate causal relationships performed among transportation, market size and FDI inflows were carried out using Dumitrescu and Hurlin (2012). The results shows impact of all transport modes on FDI inflows showing the important impact of FDI inflows for further development of transportation, as well as, the importance of markets size using GDP per capita in attracting FDI inflows and importance of FDI to further increase of GDP per capita at host countries. The feedback effect among transportation, GDP per capita and FDI, shows that it's expected that FDI inflows will enhance GDP per capita and transportation development, showing that it’s a win-win situation.

The current investigation based on the above techniques found that location factors focusing on market size using GDP per Capita and transportation has a significant impact on raising FDI inflows to MENA countries. That goes with "Dunning’s eclectic paradigm" which stated that "locational advantages" at host country consider an important determinant of FDI, and Teixeira (2011) categorized location as the main FDI determinant. Also, the importance of transportation to FDI inflows goes with Shatz & Venables (2000) which stressed on impact of transport infrastructure on FDI, also, goes with empirical literature as; Wheeler & Mody (1992), and Kumar (2001). Also, Khadaroo & Seetanah (2010) found that transportation is the main infrastructure that raises attractiveness to FDI in African countries. Halaszovich & Kinra (2020) found that national transportation positively affects trade and FDI, and Shahbaz*et al* (2021) found that transportation add to FDI in France.

These results imply that transportation development is an integral part of FDI strategies for attracting FDI inflows for MENA countries, which should be taken into consideration in future strategies and policies. The strong impact of transportation on FDI inflows shows the importance of allocating resources to transportation development specifically air and maritime transport, which may enhance FDI. That goes with Sekkat &Veganzones-Varoudakis (2004) recommendation to MENA countries of expanding their physical infrastructure to attract more FDI inflows.

The study results provide an analytical basis for evaluation of MENA countries' policies and factors for raising countries attractiveness of FDI inflows. The analysis offers guidance to policymakers to raise FDI. A key aspect of MENA countries' policies should be air and maritime transport development asa significant prerequisite for raising FDI. In the broader picture, it is important to take into account road networks and market size. On country level the analysis results show that Egypt and Morocco needs development of maritime and air transport and development of road networks. Those are the main points of policymaking based on investigation results.

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دور النقل في جذب تدفقات الاستثمار الأجنبي المباشر:
أدلة امبريقية من دول الشرق الأوسط وشمال إفريقيا

المستخلص

بحثت الدراسة دور النقل في زيادة جاذبية تدفقات الاستثمار الأجنبي المباشر إلى بلدان الشرق الأوسط وشمال إفريقيا ، من عام 2000 إلى عام 2020، وتركزت الدراسة على تأثير وسائط النقل المختلفة الجوية والبحرية والطرق البرية. استخدم التحليل تقنيات الاقتصاد القياسي بناءً على نموذج الانحدار الذاتي للإبطاء الموزع ودمج نموذج تصحيح الخطأ لتحديد التعديل قصير الأجل والعلاقة طويلة الأجل بين المتغيرات محل الدراسة بعد اختبار البيانات المقدرة لنموذجين باستخدام تقديرات CS-ECM و Jackknife. وجدت نتائج تقدير النماذج تأثير ايجابي معنوي للنقل الجوي والنقل البحري على تدفقات الاستثمار الأجنبي المباشر على المدى القصير والمدى الطويل. أيضاً تأثير ايجابي معنوي لقيم الاستثمار الأجنبي المباشر للفترة السابقة التي تظهر أهمية المعلومات المكتسبة المتزايدة حول البلدان المضيفة وفرص الاستثمار في جذب المزيد من الاستثمارات. تحليل السببية وجد علاقات ثنائية الاتجاه لكلا من النقل البحري، النقل البري والنقل الجوي وحجم السوق مع الاستثمار الأجنبي المباشر. تشير هذه النتائج إلى أن تطوير النقل هو جزء لا يتجزأ من استراتيجية الاستثمار الأجنبي المباشر لاجتذاب تدفقات الاستثمار الأجنبي المباشر الوافدة، لاسيما بالنسبة لبلدان الشرق الأوسط وشمال إفريقيا ، والتي ينبغي أخذها في الاعتبار في الاستراتيجيات والسياسات المستقبلية.

الكلمات المفتاحية: النقل، الاستثمار الأجنبي المباشر، التحليل القياسي، النقل الجوي، النقل البحري