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How do economic growth, financial sector development and environmental regulation impact FDI inflows in the MENA countries?

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ABSTRACT

This paper asks lots of questions about the hit of economic growth, environmental regulation and financial sector development on FDI inflows, using both the static and dynamic panel data approaches for a panel of 17 MENA countries for the 1990-2015 period. Our results pointed out that a higher level of growth attracts FDI inflows. They also point out that laxer environmental regulation decreases FDI inflows. On the other hand, our findings proved that FDI inflows in react positively to the financial development sector. This implies that foreign direct investment aims to invest in a country that has a higher developed financial sector to facilitate the transaction with their original country. However, more policy implications are concluded of our study can be presented as follows. First, based on the impacts of economic growth and financial development on the FDI inflows for the MENA countries, policymakers showed develop economic and financial policies concerning the FDI inflows. This suggests that policy makers in these countries consider that more prudent policies might involve eliminating barriers that prevent local firms from establishing adequate linkages, improving local firms' access to inputs, technology, and financing, and streamlining the procedures associated with selling input. Second, policymakers in the MENA region implement more environmental regulation policies in order to control carbon emissions and prevent FDI capital flights.

Contribution/Originality: The contribution of this study, first of all, is the only study to work in the MENA region for each country and for the region as a whole, as well as the use of static and dynamic estimation. Secondly, the use of environmental regulations and their impact on the attraction of FDI inflows.

1. INTRODUCTION

The topic of the connection between economic growth, environmental deterioration, and Foreign Direct Investment (FDI) has received significant academic attention in recent years. In this context, various studies have examined the causal link between FDI inflows and a number of independent factors, including financial development, CO2 emissions, and economic growth (Abdouli & Hammami, 2018; Abdouli & Omri, 2021). Consequently, (FDI) has become an increasingly important substance over the past years as a source of capital, technology, and management for the developing countries. This implies that the FDI inflows is widely believed to be crucial to economic growth enhancement (Adedoyin, Gumede, Bekun, Etokakpan, & Balsalobre-Lorente, 2020; Hansen & Rand, 2006; Omri, Nguyen, & Rault, 2014) as it brings capital, technology and know/how into the host

country. It is supposed to increase the existing stock of knowledge by transferring it Anwar and Nguyen (2010); Mohamed, Liu, and Nie (2021) into the host countries through labor training and the transfer of skills, and new managerial and organizational practice. Moreover, could increase business transactions and speed the rhythm of economic growth (Mansouri, 2009; Wang & Zhao, 2017). However, FDI inflow enhances the productivity of the host countries and promotes economic growth (Abdouli & Hammami, 2018; Adedoyin et al., 2020; Lee, 2013; Song, Chang, & Gong, 2021). Indeed, the links between FDI, economic growth and the environment are important, multiple and complex. The extent to which economic growth and environmental regulations might affect FDI, or vice versa, has been the subject of considerable academic and policy debate. In a world characterized by an economic activity driven by the FDI inflows, there are some economists who believe that economic growth plays a pivot role in attracting FDI inflows (Abdouli & Hammami, 2017; Nguyen & Nguyen, 2007). Hence, it is an important determinant of the FDI inflows (Choi, 2003; Ogono, Obange, & Odhiambo, 2017). On the other hand, the environmental regulations, which might affect FDI, have been the subject of considerable academic and political debates. Since, in a world characterized by an economic activity driven by the FDI, it is argued that environmental degradation will be accelerated, unless the environment is protected by taking the necessary measures at the national and international levels. First all, the environmental regulations positively affect FDI inflows (Dean, Lovely, & Wang, 2009). This happens when polluting FDI are concentrated in developing countries as a result of lax environmental laws. According to the pollution haven hypothesis, there is a positive relationship between FDI inflows and loose environmental laws (Rivera & Oh, 2013; Sanna-Randaccio & Sestini, 2012). His is because the freer the trade and movement of capital is, the greater the shift of polluting industries from countries with stringent environmental laws to countries with loose environmental laws will be. Aliyu (2005) has developed three dimensions for this hypothesis. The first dimension is that based on the comparative advantage theory, developing countries may impose loose environmental laws to attract FDI and hence specialize in polluting industries. The second dimension is that as a result of stringent environmental laws, developed countries will damp their polluting wastes through FDI in developing countries. The third dimension is the immense depletion of developing countries resources such as petroleum, forests and timber by giant corporations (Abdouli & Hammami, 2017; Hassaballa, 2013).

The connection between economic growth and FDI inflows, as well as environmental regulation, is an issue that has been intensively and the empirical analyzed, over the past twenty years. The related past studies may be separated and labeled into two pieces of research. The first strand research asks lots of questions about the effect of GDP[1] growth on FDI inflows. Most of the past studies are concerned with the questions of whether a higher level of growth sends positive signals to attract further FDI.

For example, Tsai (1994) suggested that economic growth is a main factor for attraction FDI inflows. Bende-Nabende and Ford (2001) deducted that economic acceleration is presented as a determining factor to attract more foreign flows. Indeed, Li and Liu (2005) showed that FDI and economic growth became significantly complementary. Batten and Vo (2009) concluded for countries undertaking reforms of cross/border capital restrictions and control and initiating other policy aimed at encouraging FDI. Then, another study found that high-quality institutions facilitate the start/up of new local ventures that can exploit knowledge spillovers from FDI inflows (North, 1991; Rodrik, 1999). In the same veins, Hsiao and Shen (2003) reported that economic growth is one of the important factors in attracting FDI, in particular in the developing countries. Deok-Ki Kim and Seo (2003) reported that GDP growth has a significant and highly persistent effect on the future level of foreign direct investment. Also, Omri (2013) have found that GDP growth has a positive impact on the foreign direct investment in the MENA countries.

[1]GDP = Gross Domestic Product.

The second strand of research investigates the effect of environmental pollution on FDI inflows. A large body of research showed that countries with lenient environmental regulations will enjoy a comparative advantage and may attract pollution/intensive industries. Accordingly, multinational enterprises (MNEs) that already have international experience appear to be the most likely to reorganize their production activities in countries with lenient environmental standards through foreign direct investment (FDI). However, according to the pollution haven hypothesis, Chung (2014) found that the weak environmental regulation in a host country may attract inward FDI by profit/driven companies' eager to circumvent costly regulatory compliance in their home countries. Gradually, these countries might develop a comparative advantage in pollution/intensive industries and become 'havens' for the world's polluting industries. For example, Jaffe, Peterson, Portney, and Stavins (1995) found that environmental regulations stimulate innovation and improved competitiveness. Jeppesen, List, and Folmer (2002) showed that foreign firms are more sensitive to environmental regulations than domestic ones. Also, Brunnermeier and Levinson (2004) concluded no significant pollution haven effect, while the environmental regulation has an insignificant effect on the firm's location decisions. Also, Raspiller and Riedinger (2008) concluded that the effect of environmental regulations on the firm's location decisions appears to be small, even for the most affected countries. Since, Rezza (2013) concluded that polluting industries tend to invest more in countries with laxer environmental regulations in terms of both the amount of investment and the number of new foreign affiliates. Similarly, Chung (2014) has found that polluting industries tend to invest more in countries with laxer environmental regulations. Omri et al. (2014) found that higher polluting emissions do send negative signals to prospective foreign investors.

On the other hand, some studies even found that foreign investors tend to invest in areas with more stringent environmental regulations (Dean et al., 2009; Kirkpatrick & Shimamoto, 2011). Indeed, Elliott and Zhou (2013) have found that higher environmental regulations can promote capital inflows which we refer to as environmental regulations induced by FDI. Another study has found no effect of environmental regulations on FDI inflows.

This paper is an attempt to examine the hit of economic pace and surrounding conditions rules on FDI inflows, in selected MENA countries, for the period 1990-2015 using both static and dynamic panel data approaches. Therefore, this article tries to answer this question: *How do money-based growth and related to surrounding conditions quality affect the FDI inflows in the MENA countries*?

In what follows, the structure of the discussion in this article is organized as follows. Section 2 the literature review section. Section 3 describes the econometric modeling approach and describes the data used. Section 4 reports and discusses the results. Section 5 decides on the article and suggests some political effects, results, and suggestions.

2. LITERATURE REVIEW

2.1. Economic Growth and FDI Inflows

The effect of economic growth on FDI inflows is developed by many studies, but mixed results: A study on 62 countries and 51 countries by, Tsai (1994) suggested that a high level of growth is a key determining factor to attract more FDI inflows. In almost the same way, Bende-Nabende and Ford (2001) showed that GDP growth has a significant effect in attracting FDI. By investigating the causality relationship between foreign direct investment and economic growth, Choe (2003) found that the causality relationship was bi/directional but with a higher tendency for increased economic growth to attract more foreign direct investment. This implies that if there is a unidirectional causality from economic growth to FDI, the national income growth can be treated to attracting FDIinflows. Also, Hsiao and Shen (2003) showed that economic structure is one of the important factors in attracting FDI, especially in developing countries. However, Li and Liu (2005) confirmed that inward FDI tends to be attracted by any host country with a large market size. Ang (2008) showed that GDP had a significant-good effect on FDI inflows and growth rate of GDP a small good effect on inward FDI. Similarly, SasiIamsiraroj and Hristos Doucouliagos (2015) stated that economic growth related positively to FDI inflows.

In the same way, Hakimi and Hamdi (2016) found that foreign flows have no influenced by economic growth in Morocco and Tunisia. By contrast, Economou (2019) show for the South European economies than FDI inflows are positively related to Economic freedom.

In addition, Nonnenberg and Mendonça (2005) found strong evidence of the existence of causality implying that GDP leads to FDI. This means that economic growth causes FDI. In Qatar, Shotar (2005) stated that, the causal direction in Qatar runs from GDP to FDI, which implies that economic growth is a prerequisite to attract FDI inflows. Hansen and Rand (2006) indicate that, the rapid growth of an economy might attract more FDI for 31 developing countries.

Indeed, Anwar and Sun (2011) found that the stock of foreign investment in Malaysia is significantly affected by the Economic acceleration. Fadhil, Yao, and Ismeal (2012) found that to attract FDI inflows the government should continue its efforts to create promising economic and investment environment in Qatar.

In more recent study, Abdouli and Hammami (2018) found that economic growth is based determinate for attract FDI inflows in Middle East countries. Also, Awunyo-Vitor and Sackey (2018) found that positive and significant among between economic growth and foreign flows in china province.

In more recent study, Odhiambo (2022) show that there is a one-way causal flow from economic growth to FDI in Kenya. Also, Abdouli and Omri (2021) argue that gives positive signs to attract more FDI in the Mediterranean countries region.

2.2. How does environmental Regulation Affect Foreign Direct Investment?

Concerning the effect of environmental regulation on FDI inflows has been developed in two strands: First of all, the existence literatures have demonstrated how strongly environmental regulation does influence FDI inflows (*pollution halos hypothesis*). For example, Studies found that the huge company Firms (HCF) that already have international experience appear to be the most likely to reorganize their production activities in countries that have more strict (Dean et al., 2009; Hassaballa, 2013). Also, Mulatu, Gerlagh, Rigby, and Wossink (2010) decided that the surrounding conditions al regulation has a significant negative effect on industry location. Kirkpatrick and Shimamoto (2011) used a logit model to examine the hit of the surrounding conditions al rules in host countries on the Japanese foreign direct investment (FDI) decision. His findings do not support the pollution haloes hypothesis. This hints that inward Japanese FDI appears to be attracted to countries that have committed themselves to a clear and honest and stable surrounding condition legal. However, Kneller and Manderson (2012) examined the relationship between to surrounding conditions and foreign firms, in the UK manufacturing industry and found that the stricter the surrounding conditions al rules the lower attract FDI inflows. Similarly, Lee checked up the neutrality hypothesis for FDI inflows and CO_2 emission in the G20.

Recently, Wang, Sun, and Guo (2019) stated that strong environmental regulation encourages FDI inflows to invest in green technology spillover to protect environmental quality. Also, Contractor, Dangol, Nuruzzaman, and Raghunath (2020) found that for 189 countries the multinational companies aim to invest their projects in countries with stronger contract enforcement and more efficient international trade regulations.

On the other hand, other studies have concluded that the pollution haven hypothesis as well-validated so that the pollution/intensive industries are more likely to move from developed to less developed countries since the environmental regulation in the less developed countries are also less stringent or weak (Al-Mulali & Tang, 2013). In the U.S. Keller and Levinson (2002) suggested that the reduced environmental standard has a negative effect on foreign firms. What's more, Jeppesen et al. (2002) pointed that there is a larger effect of environmental rules exists when the smaller area is carefully thought about and highlights the importance of taking into account the mixed-up nature of firms. Similarly, Cole and Elliott (2005) examined the relationship between FDI inflows and the environmental regulations in developing countries for the 1989/1994 period. The results showed that the capital flows from Japan to the Southeast Asian countries is likely to increase the level of CO2 in the receiver countries

because most of the investments are focused on heavy and businesses. Leiter, Parolini, and Winner (2011) found that the reducing of the surrounding conditions al regulation attract the FDI inflows.

In the same veins, in Malaysia and China, Wang, Shi, Li, and Wang (2011) and Borhan, Ahmed, and Hitam (2012) pointed out that the same positive relationship between FDI and environmental regulation is found for Malaysia and China. These findings told about that less developed countries are always the best choice of investment due to the low surrounding conditions (Cole, Elliott, & Fredriksson, 2006). Besides, other studies, like, that of Rezza (2013) in the host countries showed that businesses tend to invest more in countries with laxer rules in terms of both the amount of investment and the number of new foreign associates (Chung, 2014). Abdouli and Hammami (2017) also found that the low environmental regulation affected positively foreign flows.

Recently, Yuan et al. (2020) the results show that the strengthening of related to surrounding conditions regulation policies can improve the quality of FDI and avoid making China as Environment for pollution ("pollution haven hypothesis). In contrast, Fahad, Bai, Liu, and Baloch (2022) stated that environmental regulation promotes the technological innovation within the Chinese industry and attract larger foreign capital investment.

2.3. How does A Financial Development Sector Taffect FDI Inflows?

The importance of financial services for foreign firms is twofold. Like local firms, foreign firms can use financial services for overdraft facilities, loans, or payments to their suppliers of intermediate goods. Developed financial services also facilitate the financial transactions between foreign firms and their customers and employees in the host country. Generally, financial development is an engine of economic growth which provides better business opportunities for customers and firms. Since local investors have better information about the opportunities and the risks of the local market, the distance between foreign investors and local market generally worsens this informational asymmetry. Obtaining better information about the risks of the local market through financial intermediaries helps foreign investors to know and be confident about profit opportunities in the country, which encourages FDI (Kinda, 2010). Few studies have linked FDI location to financial development. They found that financial development encourages FDI.

In addition, Ang (2008) for Malaysia demonstrate that increases in the level of financial development, infrastructure development, and trade openness promote FDI. Similarly, Al Nasser and Gomez (2009) found that FDI is significantly and positively correlated with the banking sector variables, besides it is directed into countries that are financially developed and institutionally strong. Similarly, Lee and Chang (2009) found that the financial development indicators have a larger effect on economic growth than FDI does.

On the other hand, for 97 countries, Dutta and Roy (2008) showed that the impact of financial development on FDI becomes negative beyond a threshold level of financial development whereas political risk factors affect the relationship by altering the threshold level of financial development. Anyanwu (2012) found that the higher financial development has negative effect on FDI inflows for 5 regional groups. In contrast, Hajilee and Nasser (2015) stated that financial development sector has long-run effects to attract more the inward flow of FDI in 11 out of 14 Latin American countries. However, Donaubauer, Neumayer, and Nunnenkamp (2016) reveal that foreign direct investment increases with better developed financial sector in both the host and the source country

Similarly, Bayar and Gavriletea (2018) concluded that the unidirectional causal relationship running from the financial development to FDI inflows but not vice versa. Similarly, Islam, Khan, Popp, Sroka, and Oláh (2020) stated that that the financial development sectors of BRI host countries significantly attracts FDI stocks.

In more recent study, Shahbaz, Mateev, Abosedra, Nasir, and Jiao (2021) argue that financial development sector reduced foreign direct investment in France.

3. ECONOMETRIC METHOD AND DATA

3.1. Econometric Method

The empirical analysis is carried out in a panel-data setting. To avoid a spurious regression, we further employed normal Least Squares (OLS), fixed consequences and Random outcomes (RO) fashions, and the generalized method of moments (GMM) to estimate our static and dynamic panel (see for instance, Omri et al. (2014); Abdouli and Omri (2021). The procedure is known for its appropriateness in robustly identify in the determinants of FDI inflows. The regression model is expressed as:

$$FDI = (GDP, CO_{2,}, L, FD)^{\psi} \quad (1)$$

The logarithmic transformation of Equation 1 is given with the aid of:

$$Log(FDI)_{it} = \psi_0 + \psi_1 Log(GDP)_{it} + \psi_2 Log(C0_2)_{it} + \psi_3 Log(L)_{it} + \psi_4 Log(FD)_{it} + \varepsilon_{i,t} \quad (2)$$

According to, Shahbaz and Lean (2012), the log-linear specification provides consistent and reliable empirical results, comparative to the linear case. The log-linear is also employed in our model to consider direct estimates of elasticity since they are the coefficient of explanatory variables. Therefore, Equation 2 is specified as:

$$Log(FDI)_{i,t} = \psi_0 + \psi_{1i,t} Log(GDP)_{i,t} + \psi_{2i} Log(C0_2)_{i,t} + \psi_{3i} Log(L)_{i,t} + \psi_{4i} Log(FD)_{i,t} + \varepsilon_{i,t} \quad (3)$$

Accordingly, we can divide Equation 3 by L we have and get each series in per capita terms:

$$Log(FDI)_{i,t} = \psi_0 + \psi_{1i,t} Log(GDP)_{i,t} + \psi_{2i} Log(C0_2)_{i,t} + \psi_{3i} Log(FD)_{i,t} + \varepsilon_{i,t} \quad (4)$$

Where the subscript i = 1,…, n denotes the country (N = 17 in our study) and t = 1,…, T denotes the time period, $Log(GDP)$ represents the GDP per capita, $Log(FDI)$ the per capita foreign direct investment , $Log(CO_2)$the per capita CO_2 emissions and $Log(FD_{4it})$ the financial development (FD) .

A typical model examining the effect of FDI on the environment has the form of Equation 4. In this case, economic growth, the environmental regulation, and the level of financial development (FD) have a great impact on FDI flows (see, (Abdouli & Omri, 2021; Anwar & Sun, 2011; Lee, 2013; Olusanya, 2013; Omri & Sassi-Tmar, 2015; Pao & Tsai, 2010)).

3.2. Estimation Procedure

In this study, both the static and dynamic panel estimation techniques are estimated by using the OLS, Fixed and Random effect for static Panel and the generalized method of moments (GMM) to estimate our dynamic panel information version which also allows for the lagged stage of economic increase. This method makes use of a set of instrumental variables to solve the endogeneity hassle of the repressors. There are two styles of GMM estimators (difference and system) and they can be both alternatively considered in their one-step and two-step versions. The set of instruments of the difference- GMM estimator (Diff-GMM) includes all the available lags in difference of the endogenous variables and the strictly exogenous repressors (Arellano & Bond, 1991). The GMM estimator (system-GMM) consists of not best the previous instruments but additionally the lagged values of the dependent variable (Blundell & Bond, 1998). It facilitates resolve the endogeneity hassle springing up from the capability correlation between the unbiased the independent variable and the error term in dynamic panel data models (Çoban & Topcu, 2013). It additionally allows dealing with omitted dynamics in static panel records models, owing to the ignorance of the impacts of lagged values of the dependent variable (Bond, 2002).

3.3. Panel Unit Root Tests

We start our analysis with the implementation of the panel unit root checks. In panel records analysis, the panel unit root check must be taken first so that it will perceive the desk-bound properties of the relevant variables. in this study, we select panel unit root exams, Levin, Lin, and Chu (2002) (LLC) and Im, Pesaran, and Shin (2003) (IPS). The null hypothesis of the above two unit root tests is that there exists a unit root (i.e. the variables are non-desk bound), while the alternative hypothesis states that no unit root exists in the collection (i.e. the variables are non-stationary). Table 1 suggests the consequences of panel unit root assessments for the levels of variables. It can

be seen that all the variables in level are statistically significant under the LLC and IPS tests, which indicates that all variables are integrated of order one, I (0).

Table 1. Results of panel unit root tests.

Variables	LLC test		IPS test	
	Level		Level	
	T-statistics	P-value	T-statistics	P-value
FDI	-6.312*	(0.000)	-4.963*	(0.000)
GDP	-3.865*	(0.003)	-2.369*	(0.000)
CO_2	-2.369*	(0.000)	-4.630*	(0.000)
FD	8.865**	(0.018)	-2.112***	(0.061)

Note: All panel unit troot tests were performed with restricted intercept and trend for all variables. In addition, Lag length of variables is shown in small parentheses. *, **and *** indicate significance at the 1%, 5%, and 10%levels, respectively.

3.4. Correlations between the Various Variables

In Table 2, the correlation matrix for the key variables is presented. As expected, FDI inflows have a strong, significant and positive correlation with GDP, CO_2 emissions and financial development, which supports the existing literature that GDP, CO_2 emissions and financial development are important determinants for FDI inflows. Table 2 also shows that GDP, CO_2 emissions and financial development are highly correlated positively.

Table 2. Correlations between the various variables used in the regression models.

Variables	Log(FDI	Log (GDP)	Log(CO_2)	Log(FD)
Log(FDI)	1.000			
Log (GDP)	0.453	1.000		
Log(CO_2)	0.428	0.823	1.000	
Log(FD)	0.304	0.625	0.317	1.000

4. DATA

We use annual data for the per capita FDI inflows, per capita GDP, per capita CO_2 emissions, financial development (FD), and all the data, collected for the period 1990–2015, are sourced from the World Bank's World Development Indicators. To estimate our models, we divide the variables by the population to get the variables in per capita terms.

Our study covers 17 countries selected on the basis of data availability. They include: (a) 12 Middle Eastern countries, namely: Kuwait, Oman, Qatar, Saudi Arabia, Lebanon, Iraq, United Arab Emirates, Turkey, Syria, Iran, Yemen and Jordan;(b) 5 North African countries, namely: Algeria, Morocco, Tunisia, Egypt and Libya.

4.1. Descriptive Statistics

Table 3 indicates the descriptive records of the variables used in our estimation. On common, this table affords a statistical summary associated with the real values of the used variables for each country. The highest means of per capita emissions (79.908) and real GDP in keeping with capita (63772.9) are in Qatar, whereas the highest means of FDI inflows (107505.4) is in the UAE. The lowest means of CO2emissions (1.361) and GDP per capita (918.143) are in Yemen. Then, the lowest mean of FDI inflows (0.551) is in Algeria and (0.67) in Syria, respectively. Additionally, Iraq has the highest volatility (defined by the standard deviation) in per capita CO2 emissions (56.244). The highest, FDI inflows of (356189.6) and GDP per capita of (10133.71), are in the UAE), while the least volatility in CO2 emissions and GDP per capita are in Yemen (0.165) and (79.9) respectively.

Table 3. Summary statistics (Before Taking logarithm), 1990-2015.

Panels	Descriptive statistics	FDI (Net inflows)	GDP per capita (Constant 2005USD)	CO_2 per capita	FD (Per capita)
Algeria	Mean	0.551	3250.9	4.595	21.912
	Std. dev.	0.448	404.966	0.363	11.035
	CV	1.423	0.149	0.119	0.553
Egypt	Mean	1.125	1411.096	3.081	8.307
	Std. dev.	1.101	280.242	0.783	6.086
	CV	1.713	0.238	0.381	0.804
Iran	Mean	0.851	2979.538	8.834	16.504
	Std. dev.	0.989	608.39	2.298	20.349
	CV	2.034	0.245	0.39	1.354
Iraq	Mean	2.895	2305.204	50.216	819.064
	Std. dev.	2.627	292.759	56.244	932.296
	CV	1.587	0.151	1.68	1.251
Jordan	Mean	3.707	2599.732	5.063	18.529
	Std. dev.	3.822	493.764	0.381	8.654
	CV	1.804	0.227	0.113	0.513
Kuwait	Mean	20.832	31335.66	43.998	263.823
	Std. dev.	58.877	12701.34	4.848	63.046
	CV	4.946	0.486	0.165	0.262
Lebanon	Mean	46.202	6837.253	6.728	50.388
	Std. dev.	34.15	983.623	0.791	21.081
	CV	1.293	0.172	0.176	0.459
Libby	Mean	3.035	8590.322	14.105	73.691
	Std. dev.	4.256	1372.523	0.926	13.518
	CV	2.454	0.191	0.098	0.201
Morocco	Mean	0.719	2243.83	2.078	17.881
	Std. dev.	0.634	438.611	0.467	6.187
	CV	1.542	0.234	0.336	0.38
Oman	Mean	5.878	14573.64	18.75	111.739
	Std. dev.	7.117	2144.429	9.002	31.829
	CV	2.118	0.176	0.72	0.312
Qatar	Mean	27.069	63772.9	79.908	425.756
	Std. dev.	28.058	5418.414	14.102	170.494
	CV	1.813	0.102	0.264	0.44
Saudi Arabia	Mean	7.117	16522.1	22.886	128.166
	Std. dev.	8.696	2196.053	3.068	38.524
	CV	2.137	0.158	0.201	0.33
Syria	Mean	0.67	1823.969	4.535	11.856
	Std. dev.	0.569	218.804	0.425	5.316
	CV	1.486	0.143	0.14	0.492
Tunisia	Mean	1.881	3583.048	3.21	26.509
	Std. dev.	1.402	778.318	0.404	12.225
	CV	1.302	0.26	0.188	0.507
Turkey	Mean	38.103	7782.024	5.079	23.929
	Std. dev.	83.813	1255.094	0.797	52.634
	CV	3.848	0.193	0.234	2.417
Yemen	Mean	2.132	918.143	1.361	4.722
	Std. dev.	3.978	79.9	0.165	3.82
	CV	3.266	0.104	0.182	0.889
UAE	Mean	107505.4	48683.36	39.768	681.403
	Std. dev.	356189.6	10133.71	8.492	382.139
	CV	5.798	0.25	0.32	0.615
Panel	Mean	6333.297	12894.86	15.83	111.631
	Std. dev.	88307.47	18188.95	20.838	206.238
	CV	24.4	1.692	1.974	2.03

Note: Std. dev.: indicates standard deviation, CO_2: indicates per capita carbon dioxide emissions, GDP indicate per capita economic growth, FDI indicate FDI inflows per capita, FD indicates level of financial development, UAE indicates United Arab Emirates, CV indicates the coefficients of variation (standard deviation/to/mean ratio), respectively.

However the lowest volatility of FDI inflows (0.448) is in Algeria. It is also mentioned that the UAE is very volatile in FDI inflows; with a variant coefficient of (5.798), that is the highest in comparison to different international locations′ coefficient of version. Furthermore, we can see that the Iraq is risky in CO2emissions; its coefficient of version of (1.68), that is the very best while as compared to different international locations′ coefficient of variant.

In addition, the very best coefficient of variant of GDP in line with capita, while compared to different countries′ coefficient of variant is (0.381) of Kuwait. Typical, for the MENA international locations, Qatar and the UAE have the best method of in keeping with capita emissions, GDP and FDI inflows, alternatively the finest volatilities are in Iraq and within the UAE respectively, at the same time as the lowest approach and variances are in Yemen, except for per capita CO2 emissions and FDI inflows are in Algeria. We can finish that the nations that have the very best according to capita CO2 emissions are those which.

5. RESULTS AND DISCUSSIONS

5.1. Results of Static Panel Estimations

To examine the impact of economic growth, CO_2emissions, financial development on FDI inflows in the MENA countries, we consider a set of static panel estimation techniques including cross-section pooled Ordinary Least Squares (OLS), Fixed and Random Effects (RE) models.

The results from the estimated model are presented in the Table; which contains the OLS and fixed effect (FE) results.

The empirical results for an individual panel about Equation 4 are presented in Table 4, which also shows that economic growth has a significant impact on FDI inflows per capita for 7 out of 17 countries .However, for Jordan and the UAE, this impact is a significantly positive at 1% and 10% levels, respectively. The results suggest that a 1% and 10% increase in economic growth increase FDI inflows for the Libby, UAE and the Jordan by around0.345%,8.556% and 7.83%, respectively. Our empirical evidence is thus consistent with the results reported by Anwar and Sun (2011) for Malaysia and Omri (2013) for the MENA countries Awunyo-Vitor and Sackey (2018) in China province and Abdouli and Omri (2021) in the Mediterranean countries region. However, this result shows that these countries apply healthy economic policies to attract more foreign flows.

On the other hand, economic growth has a negative impact on FDI inflows in Lebanon, Libya, Morocco, Syria and Yemen, respectively. Accordingly, a 1% and 5% increase in economic growth results in a 1.524%, 2.26%, 2.01% and 11.947% increase in the FDI inflows, mean that higher economic growth send negative signals to prospective foreign investors. The results are contradictory to, Abdouli and Omri (2021) argue that gives positive signs to attract more FDI in the Mediterranean countries region. Moreover, economic growth has an insignificant impact for the remaining countries. Such as Algeria, Egypt, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, Tunisia and Turkey, respectively.

In addition, per capita CO_2 emissions have a significant impact on FDI inflows for 4 countries out of 17.Only for Egypt, Jordan and Qatar, this impact is positive. This indicates that a 1% increase in CO_2 emissions raise the FDI inflows by around 11.92%and 5.61%for Jordan and Qatar, respectively. A 5% increase in CO_2 emissions results in an8.27% increase in the FDI inflows for Egypt. This implies that higher polluting emissions do send positive signals to prospective foreign investors. Therefore, the result shows that polluting industries tend to invest more in countries with laxer environmental regulations in terms of both the amount of investment and the number of new foreign affiliates. This result is consistent with the findings of Cole and Elliott (2005) for the developing countries; Leiter et al. (2011) for European Country-Industry; Borhan et al. (2012) and Wang, Yin, Zhang, and Zhang (2012) for Malaysia and China, Rezza (2013) for the host countries, Abdouli and Hammami (2017) in the MENA region and Contractor et al. (2020) found that for 189 countries. In addition, for the selected countries are utilized low environmental regulations to attract more FDI stocks, what validate the pollution haven hypothesis?

Table 4. Regression results of Equation 4.

Countries	Dependent variable: FDI inflows (FDI)							
	Intercept		GDP		CO_2		FD	
Alegria	11.008	(0.447)	2.572	(0.223)	-0.747	(0.711)	2.522*	(0.000)
Egypt	6.663	(0.903)	-2.3	(0.876)	8.271**	(0.048)	-2.255	(0.297)
Iran	-64.313	(0.220)	-1.219	(0.311)	3.649	(0.512)	-1.195	(0.288)
Iraq	-6.569	(0.876)	-0.048	(0.865)	-2.57	(0.608)	-0.047	(0.873)
Jordan	92.759	(0.129)	8.556***	(0.077)	11.926*	(0.006)	8.388**	(0.033)
Kuwait	-45.759	(0.056)	3.254	(0.404)	11.112	(0.164)	3.19	(0.295)
Lebanon	-3.414	(0.289)	-2.26*	(0.000)	-0.649*	(0.009)	-2.216*	(0.000)
Libya	-32.506***	(0.067)	0.345*	(0.016)	11.022	(0.734)	0.338	(0.805)
Morocco	-106.755***	(0.056)	-11.947**	(0.039)	9.047	(0.146)	-11.71**	(0.017)
Oman	-19.6	(0.462)	2.935	(0.851)	-0.359	(0.841)	2.877	(0.520)
Qatar	26.313	(0.854)	3.984	(0.672)	5.619*	(0.001)	3.906	(0.220)
SA	-143.379	(0.286)	-3.949	(0.335)	-3.335	(0.232)	-3.872	(0.641)
Syria	-91.463**	(0.011)	-1.524*	(0.018)	1.721	(0.196)	-1.494	(0.260)
Tunisia	-55.031	(0.312)	-2.048	(0.333)	-3.425	(0.483)	-2.008	(0.536)
Turkey	-53.284	(0.361)	0.704	(0.312)	-12.457	(0.136)	0.69	(0.007)
Yemen	-77.427**	(0.045)	-2.01**	(0.044)	1.844	(0.507)	-1.971*	(0.000)
UAE	2.094	(0.761)	7.83*	(0.000)	0.367	(0.358	7.676*	(0.000)
Panel (F E)	-12.766*	(0.000)	0.321*	(0.004)	0.743	(0.184)	0.615*	(0.002)
Observations	391							
No. countries	17							
R2	0.370							
Hausman test (P-value)	8.21	-0.041						

Note: Values in parenthesis are the estimated p/values.
Hausman test is the Hausman specification test.
*Coefficient significant at the 1% level.
**Coefficient significant at the 5% level.
***Coefficient significant at the 10% level.

In contrast, FDI inflows are also negatively and significantly affected by CO_2 emissions a 1% level of pollution emissions might lead to the reduction of the FDI inflows by 0.64% in Lebanon. However, the negative sign of CO_2 emissions showed that foreign investors tend to invest in areas with more stringent environmental regulations. These results are consistent with the findings of Mulatu et al. (2010) for Europe; Kirkpatrick and Shimamoto (2011) for Japan and Kheder and Zugravu (2012) for UK manufacturing industry, and Fahad et al. (2022) stated that environmental regulation promotes the technological innovation within the Chinese industry and attract larger foreign capital investment (pollution halo hypothesis).

Regarding, the financial development, the coefficient is statistically significant for 7 countries out of 17.For, Algeria, Jordan and Turkey, this coefficients is positive and significant on FDI inflows. This implies that a 1% increase of financial development increases FDI inflows by around 2.52% and 7.67% for Algeria, and UAE, respectively. However, for Jordan, a magnitude of 8.38% indicates that a 5% increase in financial development increases FDI inflows. This result is consistent with the findings of Deichmann, Eshghi, Haughton, Ayek, and Teebagy (2003) for Turkey, Ang (2008) for Malaysia, Lee and Chang (2009) for 37 countries; also, Islam et al. (2020) stated that that the financial development sectors of BRI host countries significantly attracts FDI stocks.

On the other hand, FDI inflows are also negatively and significantly affected by financial development since a 1% increase in financial development decreases the FDI inflows by around 2.21%, 11.71% and 1.97% for Lebanon, Morocco and Yemen, respectively. This implies that higher financial development has a negative effect on FDI inflows. This result is in line with, that of Anyanwu (2012) for 5 regional groups (East Africa, North Africa, Southern Africa, Central Africa) and Shahbaz et al. (2021) in France .For the remaining countries, no significant impact is found.

The results of statistics Panel regression are presented in the Table. To choose between FE and RE model, we use the Hausman specification test to examine the null hypothesis that random effects are consistent and efficient.

Similarly, if this hypothesis is rejected, then the estimation results provided by FE model are found to be more robust than others (Tang & Abosedra, 2014).

The coefficient of Hausman specification test rejects the null hypothesis of RE model is appropriate and more efficient. In this case, which can said that the results of the FE model are more appropriate than of those of the RE model.

In relation to this issue the Hausman test exposes that the p- value is less than (0.041), therefore its result suggests to be chosen the fixed effect model; the empirical result shows that fixed effect model is more appropriate for analyzing of data.

In the fixed effect model, the p-value of R-square is 0.370, which explains that the relationship between the dependent variable (FDI inflows) of the MENA countries and all the independent variables (GDP, CO_2, FD) are high. The value means that about 37 percent of the variation that occur in FDI inflows can be explained by economic growth, CO_2 emissions and financial development. As expected, we found that economic growth and FD have positive and significant impacts on FDI inflows in the MENA countries, while the impacts of CO_2 emissions are insignificant.

Therefore, we can see that economic growth has the highest impacts on FDI inflows in the MENA countries. The results suggest that a 1% increase in economic growth raise these FDI inflows for the MENA countries by around 0.32%. This implies that economic growth is one of the important factors in attracting FDI, in particular, in the MENA countries. This is in line with the findings of Hsiao and Shen (2003) for 23 developing countries; Nguyen and Nguyen (2007) for Vietnam; Anwar and Sun (2011) for Malaysia; Omri (2013) for the MENA countries, Kinuthia and Murshed (2015) for Malaysia and Odhiambo (2022) in Kenya. Based on these results, it can be concluded that the inflow of emerging foreign direct investment attracted by Kenya in recent years is largely driven by the strong economic growth and prudent macroeconomic policies that the country has been pursuing in recent decades.

We also saw that financial development has a positive and significant impact on FDI inflows at 1% level. A magnitude of 0.615 indicates that a 1% increase in financial development increases FDI inflows in the MENA countries by around 0.61%. This implies that an increase in financial development tends to increase the level of FDI inflows. Therefore, the FDI inflows are directed countries that are financially developed and institutionally strong. The result is consistent with the findings of Lee and Chang (2009) for 37 countries; Samimi and Rezanejad (2013) for the Middle East and North Africa (MENA), Omri et al. (2014) for 3 regional sub-panels and Bayar and Gavriletea (2018) in Central and Eastern European Union Countries.

Since, the economic behavior is dynamic in nature and in order to explain its evolution over time, the FDI inflow model must be dynamic. In this context, we will also estimate a dynamic panel data model using both the difference and system generalized method of moment (GMM) estimators.

5.2. Results of Dynamic Panel Estimations

We also have in this study a dynamic panel specification where lagged levels of FDI inflows are taken into account by using both diff- and Sys-GMM estimators. The consistency of the GMM estimator depends on the validity of the instruments.

To address this issue, two specification tests are considered. The first is the Hansen test of over-identifying restrictions, which tests the overall validity of the instruments (the null is that the instruments are valid). The second is the second-order autocorrelation test for error term, which tests the null hypothesis according to which there is no autocorrelation.

Table 5 shows that the Hansen test for the difference-GMM estimation rejects the null hypothesis of over-identifying restrictions. We concluded that the difference-GMM estimation may not be suitable in this context; Therefore, we proceed to estimate our dynamic model using the system-GMM estimator wherein both specification

tests indicate that the used instruments are valid. Accordingly, we can conclude that the system-GMM estimation is robust and appropriate.

Based on the sys-GMM estimation, we found that one period lagged value of FDI inflows have a positive and significant impact on its current value at 1% level. This result is in line with that of Omri et al. (2014) for 54 countries. In addition, we find that the effects of economic growth on FDI inflows in the MENA countries are not significant. By contrast, the CO2 emissions have negative and statistically significant impacts on FDI inflows for the MENA countries at 5% level. The results suggest that a 5% increase in the CO_2 emissions decreases the FDI inflows for the MENA countries by around 1.70%. This result implies that stricter environmental regulations increase FDI inflows in the MENA countries. It follows that the results are consistent with those of Dean et al. (2009) for China, Mulatu et al. (2010) for Europe, Kirkpatrick and Shimamoto (2011) for the host countries, Kheder and Zugravu (2012) for the emerging economies and Central and Eastern European countries and Fahad et al. (2022) in Chinese industry. This result stated that environmental regulation promotes the technological innovation within to attract larger foreign capital investment.

Finally, financial development has a positive and significant effect on the FDI inflows at 5% level. The magnitude of 0.60implies that a 1% increase in financial development increases the FDI inflows by 0.60%. This result indicates that financial development promotes the FDI inflows in the MENA countries. This implies that the developed financial services also facilitate financial transactions between foreign firms and their customers and employees in the host countries. Generally, financial development is an engine of economic growth as it offers better business opportunities for customers and firms. This finding is consistent with those of Ang (2008) for Malaysia, Al Nasser and Gomez (2009) for 15 Latin American countries. In contrast, Shahbaz et al. (2021) argue that financial development sector reduced foreign direct investment in France.

Table 5. Results of Sys-GMM and Diff-GMM.

Independent variables	Dependent variable: FDI inflows (FDI)			
	Sys-GMM		Diff-GMM	
FDI(t-1)	0.5844*	(0.000)	0.6579*	(0.000)
GDP	0.826	(0.216)	1.085	(0.222)
CO_2	-1.705**	(0.041)	-0.636	(0.612)
FD	0.600**	(0.029)	0.156***	(0.095)
Intercept	-6.271	(0.142)		
Observations	374		357	
No. countries	17		17	
AR(1) test (p-value)	-1.56	(1.21)	-1.60	(0.110)
AR(2) test (p-value)	0.119	(0.22)	1.22	(0.222)
Hansen J-test(p-value)	12.61	(0.086)	11.63	(0.866)

Note: Values in parenthesis are the estimated p/values.
*Coefficient significant at the 1% level.
**Coefficient significant at the 5% level.
***Coefficient significant at the 10% level.

The overall findings, for the static panel (FE) as well as dynamic estimations (SYSTEM-GMM), show that for the static panel FDI inflows of the MENA countries are very sensitive to the level of economic growth, environmental quality, and financial development. However, for the dynamic panel estimations the FDI inflows are not sensitive to the level of economic growth. Accordingly, the policymakers should take into account these phenomena in order to build sound foreign and environmental policies to attract FDI inflows.

6. CONCLUSIONS AND POLICY IMPLICATIONS

The impact of economic growth and the environmental quality on the FDI inflows has been extensively investigated in the past literature. To examine this impact, we use the static (OLS, Fixed effect: FE, random effect: RE) and the dynamic panel estimations (difference GMM and system GMM). We tackle this issue empirically for

17 MENA countries for the 1990 -2015 period. We are motivated by the fact that there are no studies that investigated the impact of economic growth and environmental regulations on FDI inflows.

The main findings for the 1990-2015period show that the impact of economic growth and environmental regulation on the FDI inflows by using both the static and the dynamic panel estimation. Firstly, the empirical results for individual panel show that increases of economic growth decrease the FDI inflows for Jordan and the UAE. This implies that economic growth did not attract FDI inflows. In addition, economic growth has a positive impact on the FDI inflows for Lebanon, Libya, Morocco, Syria and Yemen. This means that higher economic growth sends positive signals to prospective foreign investors. But it has an insignificant impact on the remaining countries, such as Algeria, Egypt, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, Tunisia and Turkey, respectively.

Secondly, the environmental regulation has an impact on the FDI inflows. In fact, foreign investors tend to invest in areas with stringent environmental regulation. On other hand, for Egypt, Jordan and Qatar, the environmental regulations positively affect the FDI inflows. This implies that the choice to invest is due to the low stringent environmental policies.

Finally, financial development has a positive impact on the FDI inflows is a positive impact for Algeria, Jordan and Turkey. Actually, the increase of financial development increases the FDI inflows. This implies that foreign firms can use financial services for overdraft facilities, loans, or payments to their suppliers of intermediate goods. Developed financial services also facilitate financial transactions between foreign firms and their customers and employees in the host country. However, for Lebanon, Morocco and Yemen, higher financial development has a negative effect on the FDI inflows.

On the other hand, both estimation techniques (FE and SYS-GMM) show that the impact of economic growth on the FDI inflows. This impact is positive and significant for the static estimations, but insignificant for the dynamic estimations. The positive impact of economic growth on the FDI inflows implies that higher economic growth attracts FDI inflows in the MENA countries. However, the impact of the environmental quality on the FDI inflows is negative and significant for SYS-GMM, but insignificant for FE. The negative impact of the environmental regulations on FDI inflows implies that laxer environmental regulations decrease FDI inflows in the MENA countries.

Finally, financial development has positive and significant impact for both estimation techniques. This implies that the increase of financial development raises FDI inflows in the MENA countries.

The main policy implications arising from our study can be presented as follows. First, based on the impacts of economic growth and financial development on the FDI inflows for the MENA countries, policymakers showed develop economic and financial policies concerning the FDI inflows. This suggests that policy makers in these countries consider that more prudent policies might involve eliminating barriers that prevent local firms from establishing adequate linkages, improving local firms' access to inputs, technology, and financing, and streamlining the procedures associated with selling input.

Second, policymakers in the MENA region implement more environmental regulation policies in order to control carbon emissions and prevent FDI capital flights.

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