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RISK PREMIUM, INTEREST RATE, INFLATION AND FDI IN THE TIME OF CORONAVIRUS: A CASE STUDY OF MENA COUNTRIES

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ABSTRACT

Purpose: the purpose of study is estimate the Risk premium, Interest rate, Inflation and FDI in the through of Coronavirus in the MENA countries.

Theoretical framework: The theoretical framework included the study of the main variables, which are risk premium, interest rate, inflation, and foreign direct investment during the Corona virus pandemic.

Design/methodology/approach: Concentrating on "COVID-19", as an effective factor on the Foreign direct investment (FDI), I employ data of "MENA (Middle East and Northern Africa)" countries from 2000 to 2021 to investigate the impact of COVID-19, financial and macroeconomic indicators on FDI relying on the analytic research approach of Static panel data regression, including Pooled OLS, Fixed effect (FE), and Random effect (RE) using STATA software as the statistical evaluation tool.

Findings: The outcome, as expected, reveals the significant negative impact of "inflation", real interest rate" and "COVID-19", and positive impact of "exchange rate", and "GDP per capita" on "FDI" in MENA economies.

Research, Practical & Social implications: This suggests that supporting and handling pandemic situations and improving financial measures by government may lead to higher rate of foreign investment particularly FDI.

Originality/value: The findings of this analysis will be valuable for the "policymakers" to prepare suitable strategies in promoting foreign investment in economies.

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PRÊMIO DE RISCO, TAXA DE JUROS, INFLAÇÃO E IDE NA ÉPOCA DO CORONAVÍRUS: EVIDÊNCIAS DA ESTIMATIVA DE DADOS EM PAINEL DOS PAÍSES MENA

RESUMO

Objetivo: o objetivo do estudo é medir o prêmio de risco, a taxa de juros, a inflação e o IDE durante o coronavírus nos países MENA.

Referencial teórico: O referencial teórico incluiu o estudo das principais variáveis, que são prêmio de risco, taxa de juros, inflação e investimento estrangeiro direto durante a pandemia do vírus Corona.

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Desenho/metodologia/abordagem: Concentrando-me no "COVID-19", como um fator efetivo no Investimento Estrangeiro Direto (IED), utilizo dados dos países "MENA (Oriente Médio e Norte da África)" de 2000 a 2021 para investigar o impacto de COVID-19, indicadores financeiros e macroeconômicos sobre FDI, contando com a abordagem de pesquisa analítica de regressão de dados de painel estático, incluindo OLS agrupado, efeito fixo (FE) e efeito aleatório (RE) usando o software STATA como ferramenta de avaliação estatística.
Resultados: O resultado, como esperado, revela o impacto negativo significativo de "inflação", taxa de juros real" e "COVID-19" e impacto positivo de "taxa de câmbio" e "PIB per capita" sobre "IED" na MENA economias.
Pesquisa, implicações práticas e sociais: Isso sugere que apoiar e lidar com situações de pandemia e melhorar as medidas financeiras do governo pode levar a uma taxa mais alta de investimento estrangeiro, especialmente IDE.
Originalidade/valor: Os resultados desta análise serão valiosos para os "policy makers" prepararem estratégias adequadas na promoção do investimento estrangeiro nas economias.

Palavras-chave: Investimento Estrangeiro Direto, COVID-19, Indicadores Financeiros, Indicadores Macroeconômicos, MENA.

PRIMA DE RIESGO, TASA DE INTERÉS, INFLACIÓN E IED EN TIEMPOS DE CORONAVIRUS: EVIDENCIA DE LA ESTIMACIÓN DE DATOS DE PANEL DE PAÍSES MENA

RESUMEN
Propósito: el propósito del estudio es medir la prima de riesgo, la tasa de interés, la inflación y la IED en medio del coronavirus en los países MENA.
Metodología: Concentrándome en "COVID-19", como un factor efectivo en la inversión extranjera directa (IED), utilizo datos de países "MENA (Medio Oriente y África del Norte)" de 2000 a 2021 para investigar el impacto de COVID-19, indicadores financieros y macroeconómicos sobre la IED que se basan en el enfoque de investigación analítica de regresión de datos de panel estático, incluidos OLS agrupados, efecto fijo (FE) y efecto aleatorio (RE) utilizando el software STATA como herramienta de evaluación estadística.
Conclusiones: El resultado, como se esperaba, revela el impacto negativo significativo de la "inflación", la tasa de interés real" y "COVID-19", y el impacto positivo de la "tasa de cambio" y el "PIB per cápita" en la "IED" en MENA economías.
Implicaciones de la Investigación: Esto sugiere que apoyar y manejar situaciones de pandemia y mejorar las medidas financieras por parte del gobierno puede conducir a una mayor tasa de inversión extranjera, particularmente IED.

Palabra clave: Inversión Extranjera Directa, COVID-19, Indicadores Financieros, Indicadores Macroeconómicos, MENA.

INTRODUCTION

The Middle East and North African (MENA) region is rich in natural resources and human and, hence, a considerable GDP - while with deviations among the countries. Nevertheless, this area did not entirely employed its widespread financial potentials, as obvious in low percentage of resident financial holdings capitalized within the area, low per capita revenue progress, and unproductive development of local investment and trade projections (Eken, El-Erian, Fennell, & Chauffour, 1996; Flayyih et al., 2022). While largely depending on natural resources, they mind to be unpredictability in the monetary (e.g., banks) sectors, that lead to distress in the economy (Dwumfour & Ntow-Gyamfi, 2018; Ali et al., 2023). Also, the extrusion impact of natural resources highlight the neglect of "technology and human capital investment" as a consequence of prompt expansion of supply industry; this impedes the long-

run economy growth (Bravo-Ortega & De Gregorio, 2005; Gylfason, 2001; Abass et al., 2022; Hussein et al., 2023). According to the WorldBank (2021) report, there are differences in "human capital outcomes" in the MENA section, such that richer states have better human capital index (0.56 till 0.67), while the conflict-impacted nations lag backside (i.e Yemen 0.37 and Iraq 0.41), consequently identifying the area below the rest. This happens as failing to transform the valuable potential of availnle population into the economic outcome lead to this situation (Al-taee & Flayyih, 2022; Shittu et al., 2022). In the same line with the world trend in "foreign investment", MENA is projected to be strictly impacted, because of the low charges of oil and commodity. Based on a projection by "the World Investment Report" (UNCTAD, 2020), the FDI flows probably decrease around 25–40%; which affect industrialization and economic aspects in MENA. This report reveals that the FDI flows to the area decrease around 10%. Furthermore, the FDI flow to "the North Africa (a part of MENA)" decreases by 11%, - excluding Egypt, whose inflows augmented by 11% in 2019 which is the largest receiver. Following that, De Ferranti, Perry, Lederman, and Maloney (2002) confirm that FDI is the major pillars of development tactics in resourceful economies, as it may support "natural resource-based actions" to promote growth using new technologies and skills. However, part of its potential advantages may not be achieved accordingly, such as failing to transfer technology to the host country. Moreover, FDI is principally delayed by "domestic policies", that cannot be simply confined. For instance, failing to check the effectiveness of FDI implementation, there is tendency to hinder foreign investment (Shittu et al., 2022). Regarding FDI, present literature highlights two key motives: "efficiency-seeking", which is about gaining advantage of lesser input charges in the host economy, plus economy platform-finding, which are, assisting host markets (Markusen, 2013; Nguyen, Genç, Haug, & Owen, 2019). This leads to escalate two key forms of FDI, explicitly horizontal and vertical FDI. "Horizontal FDI" happens as multinational firms make generally the identical services and products in both economies to enlarge their marketplaces. On other side, "Vertical FDI" happens as international firms break the value-string and making procedure vertically among countries, to decrease firm expenditures. Till 2002 as Markusen (2002) advanced an integrated structure implanting horizontal and vertical FDI factors in a universal equilibrium base, these FDI categories are considered as separate components in the foreign investment framework. Markusen (2002) entitled this combined structure as "the Knowledge-Capital" (K-C model). Conversely, Carr, Markusen, and Maskus (2001) primary presented "the K-C model" and clarified actual trades of international firms. Quickly, studies employed it to clarify "bilateral investment streams"

succeeding Markusen (2002). Currently, this approach is assumed to be the best all-purpose theory of international firms which lets horizontal and vertical national and international companies to grow simultaneously in the equilibrium according to the various groupings of the source and host economy attributes (Chattopadhyay, Rakshit, Chatterjee, & Paul, 2022).

Its more than a two year that the whole world is dealing with "Coronavirus (COVID-19)", that impacted social life and crushed the worldwide economic foundation, interrupting commerce and trade (Rakshit & Paul, 2020). The economic structure experienced a fundamental obstacle as most portions of the planet were enforced into a broad lockdown because of the continuing fatal infection, leading to a key reduction in output, employment, and trade. Moreover, both supply and demand faced unexpected shocks due to such act. The repression measures performed by the various governments to track the matter of "the COVID-19 pandemic" leading to economic disturbance, relocating globalization that finally impacted the FDI options of the international firms. Based on the report of "the UN Conference on Trade and Development" (UNCTAD) 2020, worldwide FDI will be reduced by 35 percent. It is predicted that FDI flows to emerging economies may decline greater in comparing with the developed economies as the manufacturing and principal segments got strictly impacted by the pandemic, that forms a key portion of investment inflows in the emerging economies (Badmus, Bisiriyu, & Alawode, 2022). Furthermore, the MENA economies are amongst the worst impacted countries from the crisis (ElBehairy, Hendy, & Yassin, 2022). Additionally, FDI performed a noteworthy part in accompanying the countries during and after the pandemic by assisting the authorities to track the pandemic, accompanying their associates, and developing connections with the local firms (Alfaro & Chen, 2012).

Considering the above-mentioned evidence, it is principal to assess the effect of COVID-19, financial and macroeconomic indicators on FDI in the scope of MENA economies. To the greatest of the authors knowledge, there exist no research dedicated to the linkage between COVID-19, financial and macroeconomic indicators, and FDI for MENA, using Panel data. Consequently, the target of this research is to complete this deficiency by inspecting the effect of COVID-19, credit to private, exchange rate, GDP per capita, risk, inflation, and interest rate on FDI in MENA, which is one of the important regions in the international scope, formulating it a specific case for existing research, employing the Panel methods. The findings are noteworthy for officials to prepare suitable strategies for absorbing FDI to the economies. The strictness of the continuing pandemic led to investigating its influence on FDI inflows.

This research provides several contributions to the field of FDI. I employ data collected for MENA countries (including Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, UAE, and Yemen) from 2000 to 2021 for all required information of this study. Primary, I organize the necessary stages of "panel-data regression" to evaluate the effect of "COVID-19, credit to private, exchange rate, GDP per capita, risk, inflation, and interest rate" on FDI while previous studies mostly used time-series analysis. There exist limited researches which utilize all of aforementioned elements in the analysis and mainly they disregard the essential analytical Panel data tests to identify the optimum technique among OLS, Random effect and Fixed effect. Though, this research operates "F-test, BP-LM and Hausman tests" to identify the best technique for this regression. Second, this research examines all essential analytic test of classic regression assumptions (involving auto-correlation, heteroscedasticity, and residual normality tests) that are disregarded previously. Finally, this sample of this study considered the COVID-19 role to provide more detailed view of the analysis. The rest of this study organized this way. Next Segment concisely claims the previous literature. The statistics compilation and procedure are delivered in segment 3. Following that, segment 4 demonstrates practical findings continued by argument and deductions in segment 5.

LITERATURE REVIEW

"FDI" is one of the most issues for "governments, organizations, companies, and individuals". There exist an argument regarding the possibility of this kind of investment and the responsibilities and advantages it has, particularly regarding the intentions of international businesses to invest, the factors of the "foreign investments, and the methods of management and organization in foreign companies (Qahaf, 1991)." To absorb the flow of foreign investment, a suitable investing environment ought to be offered. These conditions may be described as "a series of policies, laws, political and economic institutions that impact financier certainty and opinion by targeting investments to one economy." The absence of external and internal administrative steadiness is a discouragement to international funds of any types, irrespective of the advantages and opportunities of investing availability (Head & Sorensen, 2005). "Financial (such as credit and interest rate) and macroeconomic (such as inflation and GDP) indicators of are the most significant factors of the host economy's investment environment" (Mukhtarov, Alalawneh, Azizov, & Jabiyev, 2020). Existing studies on the determinants and trend of FDI delivers diverse practical suggestions.

Numerous studies were implemented to recognize elements of the investment environment in which have a noteworthy function in absorbing FDI. Out of these researches: Göndör and Nistor (2012) inspected the effect of "fiscal strategy" on macroeconomic indicators, that encompassed GDP, inflation and the balance of payments" in Nigeria 1980–2011. The research used the ordinary least square method (OLS) and found a direct association among GDP, monetary policy and FDI. Moreover, Rădulescu, Druică, and Omran (2012) investigated the impact of interest rate and tariff and tax incomes on FDI in Romania 1995 to 2008 using VAR method. The results suggested that greater interest rate performed a vital role in FDI interesting more than fiscal strategy (greater tax income or rate)." Additionally, Shafiq, Ahmad, and Hassan (2015) assessed the impact of "money supply and GDP on FDI" for the scope of the Pakistan using "GMM method" during 1970–2013. The assessment outcomes determined a statistically meaningful positive impact "money supply and GDP on FDI".

Boateng, Hua, Nisar, and Wu (2015) inspected the impact of "economic elements on FDI" in the region of Norway employing "FMOLS and VAR/VECM". It proved that "inflation, money supply, interest rate and unemployment" show meaningful reverse impact on "FDI". Following that, Agabeze, Nwonu, and Nwoba (2017) intended to assess the effect of the "instability of fiscal policy (including government revenues, GDP, balance of payments, government spending and total government debt) in Nigeria on FDI inflows" 2000–2014. Implementing the regression examination, the outcomes declared the "insecurity of fiscal strategy" is a critical gauge of "FDI" and "the fiscal strategy" has no impact on "FDI".

Faroh and Shen (2015) examined the effect of "FDI received from interest rate" in Sierra Leone using "OLS method" during 1985 to 2012. The finding approved that "interest rate" does not have significant impact on "FDI". Besides that, Boateng et al. (2009) couldn't show any meaningful linkage among "inward cross border investments and interest rates". Moreover, Chen (2018) explored "the long-term effects of monetary strategy on FDI" and confirmed that "nominal interest rate" increase the level of "foreign investment".

In the scope of exchange rate impact analysis, there are some limited studies for instance Moraghen, Seetanah, and Sookia (2021), Okonkwo, Osakwe, and Nwadibe (2021) and Havi (2021). Moraghen et al. (2021), used a Vector Error Correction Model (VECM) for the period 1976–2018, revealed that exchange rate volatility and higher exchange rate has negative impact FDI in the economy of Mauritius. Later, Okonkwo et al. (2021) by investigating the economies of Nigeria during 1981-2018 and applying Error Correction Model (ECM), found out that both real exchange rate and nominal exchange rate are positively related with FDI. Following that,

Havi (2021) analyzed FDI of the Ghana using the Dynamic Ordinary Least Square regression model. He recommended that the depreciation of the real exchange rate, the degree of openness of the economy and interaction term do not encourage the inflows of FDI.

Regarding credit and risk impact analysis, there are few studies such as Martins, Cerdeira, Fonseca, and Mohamed (2021) and Kartal and Bektaş (2022). Martins et al. (2021) considered the four economies of Mano River Union including Côte d'Ivoire, Guinea, Liberia and Sierra Leone and employed OLS and ARDL techniques. They showed that international trade, investment in infrastructures and "access to credit" have a positive impact on FDI. In the same line, Kartal and Bektaş (2022) used ARDL method to study the impact Credit Default Swap (CDS), as a market-based indicator of credit risk, on FDI in Turkey for the period 2001-2018. He suggested the positive impact of CDS on FDI and its negative impact on investment expenditure.

In addition to the effectiveness of financial and macroeconomic variables, the recent role and importance COVID-19 pandemic in capital flows including FDI should not be ignored. Capital flows are strongly driven by an optimistic view of investment opportunities in the host economy. COVID-19 and its effect on foreign investment, attracted negligible attention. Gujrati and Uygun (2020) academically considered the steps performed by UK, U.S., European Union, and Australia economies to progress FDI in spite of COVID-19 pandemic. The investment inflows to India decline around 59 percent in the first season of 2020 because of the contrary effect of COVID-19 (Dev & Sengupta, 2020). Following the amendment of FDI strategies and the implementation of the independence basis, FDI inflows augmented 16 percent. Also, Manoj, Kumar, and Prasad (2020) confirmed that this pandemic decreased foreign investment in Nepal. Additionally, they discovered the key obstacles to foreign investment in this economy including fragile governance, fragile structure, natural disasters, fragile business environment, environment modification, and absence of expert human resources (Flayyih & Khiari, 2023).

Kher, Tran, and Hebous (2021) and Vujanović, Casella, and Bolwijn (2021) estimated that the fear of COVID pandemic and uncertainty over trade led to higher financial risk and lower FDI by 30-40% globally. Chattopadhyay et al. (2022) assessed the impact of COVID-19 on FDI Inflows in BRICS countries during the period 1990–2020 using the Kinked Exponential (deterministic) trend, and Zivot and Andrew's trend equations. They revealed that the pandemic situation significantly impacts attracting FDI in Brazil, while it remains insensitive in the rest of the BRICS countries. Also, Camino-Mogro and Armijos (2022) find out the negative impact of COVID-19 lockdown on FDI of Ecuador using a regression discontinuity in time (RDiT)

design. Furthermore, Ho and Gan (2021) used the new international pandemic uncertainty indicator (WPUI) in GMM method and concluded that this pandemics has negative effect on FDI of Asia-Pacific countries and emerging economies. Later, Fu, Alleyne, and Mu (2021) applied Heckman estimation of monthly bilateral data and finalized the highly significant and negative impact of the pandemic on FDI of both OECD and emerging countries particularly the service sector. On the contrary, Doytch, Yonzan, Reddy, and De Beule (2021) revealed that service sector received less negative impact from the COVID-19 in comparing with the manufacturing and utility industries. Surprisingly, Syarifuddin and Setiawan (2022) and Budiono and Purba (2022) by using a local projection estimation, showed that this pandemic shows positive and negative impact on FDI depend on the sector of the Indonesian economy. Koçak and Barış-Tüzemen (2022), by studying the economies of 12 emerging countries during 2014 and 2021 and using the panel quantile regression approach, the current pandemic has inverse impact on FDI in low- and middle-income economies.

Research Gap

According to the above-mentioned literature, fairly a considerable amount of researches were implemented in assessing the impact of COVID-19, financial and macroeconomic indicators on FDI. Also, researches concentrating on the effect of crises on FDI in MENA are inadequate. Further, based on the knowledge of the authors, there exist no widespread worldwide analyses on assessing the impact COVID-19 crisis (one of the considerable crises) as well as other effective factors on FDI simultaneously and focusing on estimation assumptions and panel-data fundamental investigation phases. Consequently, the current work employs the "Panel-data technique" to fulfill the aforementioned deficiencies in FDI examination. According to the aforesaid breach, the current research suggests these hypotheses:

Hypothesis

According to the literature review, this research progresses the subsequent hypotheses:

H_1: There exists a meaningful relation among COVID-19 *and FDI in MENA economies.*

H_2: There exists a meaningful relation among credit to private (Credit) and FDI in MENA economies.

H_3: There exists a meaningful relation among exchange rate (ER) and FDI in MENA economies.

H_4: There exists a meaningful relation among Gross domestic product per Capita (GDPperCap) and FDI in MENA economies.

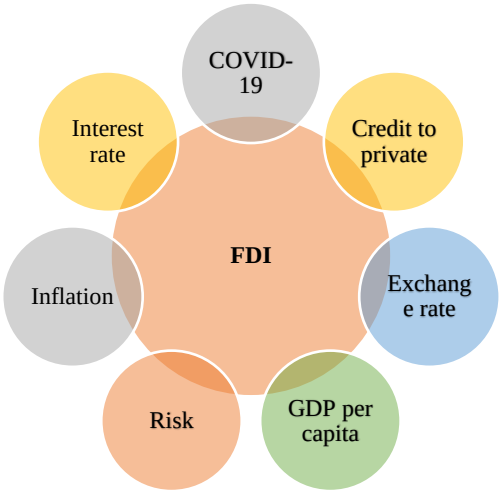
H_5: There exists a meaningful relation among risk premium (RiskPrem) and FDI in MENA economies.

H_6: There exists a meaningful relation among inflation (INF) and FDI in MENA economies.

H_7: There exists a meaningful relation among real interest rate (RIR) and FDI in MENA economies.

Consequently, the projected structure is offered in Figure 1:

Figure 1. Representation of Theoretical framework



Source: Prepared by researchers.

MATERIALS AND METHODOLOGY

The objective of the current study is to estimate the associations among FDI and aforesaid independent variables comprising COVID-19, credit to private, exchange rate, GDP per capita, risk, inflation, and interest rate in MENA (Middle East and North Africa). The current research is constructed using the secondary data, mostly acquired from the World Bank and IMF database 2000 till 2021 (latest available data).

Table 1. Variables Details

Variables	Proxy	Sources
FDI net (BOP, current US$)	FDI	World Bank
Covid-19 (dummy variable)	COVID-19	World health organization (WHO)
Real interest rate (%)	RIR	World Bank
Risk premium on lending (lending rate minus treasury bill rate, %)	RiskPrem	World Bank and IMF
Monetary Sector credit to private sector (% GDP)	Credit	World Bank and IMF

Official exchange rate (LCU per US$, period average)	ER	World Bank
GDP per capita (current US$)	GDPpercapita	World Bank
Inflation, consumer prices (annual %)	INF	World Bank
Ln: Natural logarithm of variables.		

Source: Prepared by researchers.

To inspect the aforementioned hypotheses, we use panel data estimation method.

Principal equation

$$LnFDI_{it} = \beta_0 + \beta_1 INF_{it} + \beta_2 RIR_{it} + \beta_3 RiskPrem_{it} + \beta_4 LnCredit_{it} + \beta_5 LnER_{it} + \beta_6 LnGDPperCap_{it} + \beta_7 Covid\text{-}19_{it} + \varepsilon_{it}$$

In the above equation: β_0 means intercept; β_1 to β_8 are the coefficients of IVs; and ε_{it} is the disturbance.

RESULTS AND DISCUSSION

Here, we evaluate the COVID-19 effect, credit to private, exchange rate, GDP per capita, risk, inflation, and interest rate on FDI. Moreover, robust analysis will measure and approve the principal equation findings.

The analysis begins with descriptive statistics. Summary descriptive statistic of all variables are provided in Table 2. The average of the dependent variable of this study (LnFDI) is 20.94 and it disperses from 15.46 to 24.31.

Also, independent variables are offered by inflation (INF), real interest rate (RIR), risk premium (RiskPrem), logarithm of Credit (LnCredit), logarithm of exchange rate (LnER), logarithm of GDP per capita (LnGDPperCap), and COVID-19. The means of these variables are 5.91, 3.48, 4.35, 3.52, 2.50, 8.84 and 0.09 respectively. Table 2 also shows other features of considered variables in this study such as standard deviation, minimum and maximum value of each variable.

Table 2. Descriptive Statistics of all variables in model

Variables	Mean	Std. Dev	Min	Max
LnFDI	20.94	1.46	15.46	24.31
INF	5.91	11.87	-10.07	154.76
RIR	3.48	12.07	-20.13	60.88
RiskPrem	4.35	2.70	-3.28	9.00
LnCredit	3.52	0.87	0.24	4.93
LnER	2.50	3.19	-1.31	10.65
LnGDPperCap	8.84	1.20	6.31	11.35
COVID-19	0.09	0.29	0.00	1.00

Source: Prepared by researchers.

After descriptive statistics, the correlation among variables applied in this model and it is provided in Table 3. It may be inferred that the correlation of LnFDI and inflation is moderately high and the correlation between real interest rate and LnFDI is relatively high, and the rest have lower correlation that are not causing any issue.

Table 3. Correlation coefficients between DV and IVs and Control variables

V.	LnFDI 1	INF 2	RIR 3	RiskPrem 4	LnCredit 5	LnER 6	LnGDPperCap 7	COVID-19 8
1	1							
2	-0.61 *	1						
3	-0.59 *	0.40 *	1					
4	-0.13	-0.12	0.27 *	1				
5	0.42 *	-0.38 *	-0.29 *	-0.01	1			
6	0.07	0.01	0.07	0.18 **	-0.29 *	1		
7	0.24 *	-0.07	-0.21 *	0.12	0.32 *	-0.47 *	1	
9	-0.57 *	0.55 *	0.35 *	-0.13	-0.29 *	-0.08	0.001	1

Source: Prepared by researchers.

Since multicollinearity analysis is hard to interpret only from a correlation matrix, this study calculates variance inflation factors (VIF) for all independent variables applied in this study, as shown in Table 4. The VIF determination is also a method of measuring the level of collinearity between the independent and control variables in a regression analysis (Damodar N Gujarati & Porter, 2009).

Based on to the data shown in Table 4, all VIF values are less than 10, so, it is not possible to shape the issue of multicollinearity. That is, there are no meaningful multicollinearity issue, so no variable will be excluded from the model.

Table 4. Result of Multicollinearity test

Variable	Centered VIF
INF	2.03
COVID-19	1.78
LnCredit	1.74
LnGDPperCap	1.47
LnER	1.42
RIR	1.34
RiskPrem	1.29
Average	1.58

Source: Prepared by researchers.

This research tests the main equation for no heteroscedasticity, no serial correlation, and normal distribution of error terms (table 5). In the result of heteroscedasticity checking (using Breusch-Pagan test), probability of Chi-square is insignificant, so the null hypothesis of homoscedasticity (not heteroscedasticity) is not rejected. Hence, this model does not face the matter of heteroscedasticity.

Following that, to identify serial correlation matter, the research used Wooldridge technique with the H_0 hypothesis of no serial correlation. According to the outcome (table 5), the test result is not meaningful that suggests no existence of serial correlation in this model.

Lastly, the key model is analyzed for the "normality of residuals". This research used the Doornik-Hansen test to assess the normal distribution of residuals. If the P-value of Doornik-Hansen test is significant, the distribution of residuals is not normal and otherwise it is normally distributed (Damodar N. Gujarati, 2003). According to the outcome of normality testing in table 5, the significant P-value leads to reject null hypothesis of normal distribution of residuals. However, since the number of observations is large enough, the non-normality distribution of residual is not an issue here.

Table 5. Diagnostics Tests

Main Equation	
Heteroskedasticity Test: Breusch-Pagan test	
Chi-Square	0.28
Prob	0.60
Wooldridge test for Autocorrelation:	
Chi-Square	1.934
Prob	0.214
Normality of Residuals	
Doornik-Hansen chi2	28.11
Prob	0.000

Source: Prepared by researchers.

Since the equation of this study is a Panel data, three obligatory examinations ought to be practiced finding out the optimal method among OLS, FE, and RE methods. They are F-test (OLS vs FE), Breusch-pagan test (OLS vs RE), as well as Hausman test (RE vs FE).

Table 6 reveals the finding of these tests. As the outcome of F-test shows, null hypothesis rejected and alternative hypothesis which is fixed effect (FE) is accepted. Then, the result of Breusch-Pagan test shows that the null hypothesis is not rejected too and implies the acceptance of Pooled OLS and rejecting random effect (RE). So, the Hausman test will clarify the final selection. Finally, the result of Hausman shows the null hypothesis should be rejected and the alternative hypothesis which is the FE should be accepted. Ultimately, it reveals that the most appropriate method for the main equation is FE.

Table 6. F-test, BP-LM and Hausman Tests

Tests	**Statistic**	**Prob.**
F-test	11.25	0.00
BP-LM test	0.00	1
Hausman test (Chi-Sq.)	2.66	0.000

Source: Prepared by researchers.

Table 7 explains the finding of the main model. Hence, it displays the effect of independent variables of this study on dependent variable. The result of the equation indicates that “inflation”, “real interest rate” and “COVID-19” have significant and negative impact on “FDI” with 10%, 5% and 1% significance level correspondingly while “exchange rate” and “GDP per capita” have significant positive impact at 10% and 1% significance level. The rest of independent variables do not show any significant impact on FDI.

Table 7. Panel data outcome of the main equation. (DV: Ln.FDI)

	DV: Ln.FDI				
Variable	Coefficient		Std. Er	t-Stat	Prob.
INF	-0.00545	*	0.0028	-1.93	0.057
RIR	-0.01558	**	0.0066	-2.35	0.022
RiskPrem	0.03258		0.0527	0.62	0.538
LnCredit	0.01011		0.1874	0.05	0.957
LnER	0.58972	*	0.3335	1.77	0.081
LnGDPperCap	1.33144	*	0.2713	4.91	0.000
COVID-19	-1.49646	*	0.2858	-5.24	0.000
Constant	7.87695	*	2.6007	3.03	0.003
F-test	17.64				
Prob > F	0.000				

Source: Prepared by researchers.

To approve the main finding, the robust equation is inspected. In this equation, "inflation (CPI), Credit to private and GDP per capita" are replaced with "inflation (GDP deflator), net domestic credit and GDP (current US$)" respectively as independent variable.

Robust equation

$$LnFDI_{it} = \beta_0 + \beta_1 INFdgpdef_{it} + \beta_2 RIR_{it} + \beta_3 RiskPrem_{it} + \beta_4 LnNetdomCredit_{it} + \beta_5 LnER_{it} + \beta_6 LnGDP_{it} + \beta_7 Covid\text{-}19_{it} + \varepsilon_{it}$$

Based on the table 8, in the same line with the key findings of the central model, the finding confirmed the meaningful negative effect of "Inflation (GDPdef)", and "COVID-19" and the significant positive impact of exchange rate and GDP on FDI at 1%, 1%, 5%, and 5% accordingly.

Table 8. Regression outcome of robust model

	DV: Ln.FDI				
Variable	Coefficient		Std. Er	t-Stat	Prob.
INF(GDPdef)	-0.01004	*	0.0031	-3.27	0.002
RIR	-0.00569		0.0134	-0.42	0.672
RiskPrem	0.05320		0.0824	0.65	0.521
Lnnetdomcredit	0.08522		0.0804	1.06	0.293
LnER	0.75652	**	0.3525	2.15	0.036
LnGDP	0.57942	**	0.2586	2.24	0.029
COVID-19	-1.63587	*	0.3118	-5.25	0.000
Constant	1.976203		6.8177	0.29	0.7730
F-test	19.43				
Prob > F	0.000				

Source: Prepared by researchers.

CONCLUSION

The key target of this research was to assess the effect of "COVID-19, credit to private, exchange rate, GDP per capita, risk, inflation, and interest rate" on FDI in MENA economies for the period of 2000–2021 using Static panel data analysis. According to estimation results, there is a significant connection among the variables. Furthermore, outcomes of the assessment show that "inflation", "real interest rate" and "COVID-19" have meaningful a negative effect on FDI whereas there is a positive effect of "exchange rate" and "GDP per capita" on FDI. Furthermore, the impact of risk premium and credit to private are found statistically insignificant. A significant inspiration for starting the current research is assessing the effect of COVID-19 on foreign investment in MENA. Based on the examination, we may observe that the COVID-19 shows a meaningful effect on MENA FDI. According to the outcomes, specific suggestions may be recognized, such as:

1. The governments have to implement a series of strategies and actions to stimulate financial and monetary strategies in NENA region, eliminate barriers that constraint its efficiency and provide monetary strategy means that can support in drawing FDI inflows.
2. Preserving acceptable rates of economic (GDP) growth and low rate of inflation to improve the purchasing power of the MENA economies and sustain the standard of living of the citizens, and work to lessen the interest rate, thus boosting the attraction of foreign investment.
3. The governments may try to effort to manage low interest rate and also exchange rate, where economic gauges recommend that this is probable by lowering the interest rate and indirectly rising the exchange rate, so as to lessen the negative impact of interest rate and increase the impact higher exchange rate.
4. As a policy suggestion, it advises that authorities can prepare a set of health polices to control the COVID-19 pandemic situation and refine the vaccination and medication mechanism in their regions.
5. Also, this explained that governments and politicians should give main concern to "Pandemic situation" by "supporting vaccination and general health and investing in medical equipment in the economies.

This work has been fruitful in attaining its targets. Conversely, it has various restrictions. The greatest critical restrictions signify in ignored specific macroeconomic and financial indicators because of the data accessibility. Moreover, the databank may be revised to the most current date if obtainable. The final restriction is pondering diverse gauges of financial condition of the global economy in investigation.

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