DETERMINING FACTORS IN FOREIGN DIRECT INVESTMENT INFLOW INTO MIDDLE EASTERN ECONOMIES

DOI: 10.63407/611034

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Abstract: *This article examines the application of an autoregressive distributed lag model (ARDL) to analyze the factors influencing foreign direct investment (FDI) inflow into Middle Eastern countries. Utilizing data on FDI, gross domestic product (GDP), population, life expectancy, merchandise trade, political stability, and control of corruption, the ARDL model explored both short-term and long-term relationships between these variables and FDI inflow. The simulation results indicate a significant impact of the examined factors' current and past values on the FDI inflow in the region. Specifically, it was found that increases in life expectancy rate, control of corruption index, population in the current year, and political stability indices from previous periods positively affect FDI inflow. In contrast, increases in the previous levels of GDP have a negative impact. A positive effect of past FDI inflows on their current levels was also detected, indicating a reinforcing feedback loop, where initial investments improve conditions or perceptions that attract further investments. The article contributes to understanding the dynamics of FDI in Middle Eastern countries, providing valuable data for policymakers and investors aiming to optimize conditions for attracting foreign capital. The findings underscore the importance of economic growth, price stability, and political conditions in the region for stimulating FDI inflow.*

Keywords: *Autoregressive distributed lag model, Middle East, foreign direct investment.*

Introduction

The inflow of foreign direct investment (FDI) into the Middle East has historically been the subject of extensive research due to its significant impact on the economic development and stability of the region. Understanding the

factors influencing FDI inflows becomes increasingly important as Middle Eastern countries continue to diversify their economies and reduce dependence on oil revenues. In this context, the autoregressive distributed lag model (ARDL) is a powerful econometric tool, offering a nuanced approach to studying the long-term and short-term dynamics between FDI inflows and their determinants in the Middle East. This paper discusses the application of the ARDL model to identify and analyze these influential factors, providing valuable insights for policymakers, investors, and scholars interested in the region's economic prosperity.

For Uzbekistan, an emerging economy in Central Asia, the findings of this study are particularly relevant. Like many Middle Eastern nations, the country has been actively implementing economic reforms to enhance its attractiveness to foreign investors. Understanding the factors that influence FDI inflows in the Middle East provides valuable insights that can inform Uzbekistan's policies on investment promotion, regulatory frameworks, and economic diversification. Given Uzbekistan's strategic location, abundant natural resources, and ongoing liberalization efforts, Middle Eastern economic lessons can be a benchmark for optimizing investment conditions and fostering sustainable economic growth.[1]

Uzbekistan has embarked on a path of structural reforms to improve its business environment, simplify regulatory frameworks, and integrate into the global market. Uzbek policymakers can design strategies to strengthen investor confidence, ensure economic stability, and improve governance structures by analyzing the success factors of FDI attraction in the Middle East. These efforts align with Uzbekistan's broader goal of achieving sustainable and diversified economic growth, reducing reliance on traditional sectors, and fostering innovation-driven development.

[1] [1] Ali and Al-Sadig, "The Effect of Trade Liberalization on the Volume of Foreign Direct Investment in Developing Countries," 38(4), 27–43.Asiedu, "On the Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different," 30, 107-119.

The ARDL methodology, introduced by Pesaran et al. (2001), is notable for its flexibility in dealing with variables integrated at different levels. This makes it particularly suitable for FDI studies where the properties of the underlying data are complex. The model's ability to simultaneously estimate long-term coefficients and short-term dynamics offers a comprehensive view of the interactions between FDI inflows and potential explanatory variables such as political stability, economic growth, market size, labor costs, and trade openness in the Middle East.

The Middle East's significance as a destination for FDI cannot be overstated. The region's strategic geographic position, along with substantial natural resource reserves and recent economic reforms, make it an attractive arena for international investors. However, geopolitical complexities and efforts to diversify the economy present a multifaceted landscape for FDI inflows. Thus, using the ARDL model to uncover these complexities provides a methodological advantage, allowing researchers to capture both immediate and delayed effects of various factors on FDI.

Literature Review

Previous research has identified several key determinants of foreign direct investment (FDI) inflows into the Middle East, including but not limited to economic policies, regulatory frameworks, political stability, and regional conflicts (Ali, Al-Sadig, 2013; Asiedu, 2002). The application of the autoregressive distributed lag (ARDL) model in this context allows for a detailed examination of these determinants, taking into account the region's unique economic and political characteristics. For instance, the model can help determine the impact of recent economic reforms in countries such as Saudi Arabia and the United Arab Emirates on attracting FDI, considering both short-term adjustments and long-term relationships. Furthermore, the ARDL framework facilitates the

exploration of the role of infrastructure development, innovation potential, and human capital in attracting FDI to the Middle East. Given the region's efforts to diversify and transition to a knowledge-based economy, these factors are particularly relevant. By employing the ARDL model, researchers can provide empirical evidence of the effectiveness of such initiatives in enhancing the region's attractiveness to foreign investors. The methodology section of this paper details the ARDL model specifications, data sources, and the rationale for variable selection, ensuring a robust and transparent analysis. The empirical results section presents the outcomes of ARDL estimates, highlighting both short-term and long-term determinants of FDI inflows to the Middle East. This will include a discussion on the role of economic variables such as GDP, population, and the share of goods trade from GDP, as well as non-economic factors like political stability, life expectancy at birth, and the control of corruption.

Applying the ARDL model to study the factors influencing FDI inflows to the Middle East offers a comprehensive analytical framework that accounts for the economic and political nuances of the region. This article aims to contribute to the existing literature by providing a detailed empirical analysis using the ARDL approach, offering practical recommendations for policymakers seeking to enhance the Middle East's attractiveness to foreign investors. Through this research, we emphasize the importance of a stable and favorable investment environment, supported by sound economic policies and reforms, for attracting a sustainable inflow of FDI into the region.

The literature review on using the autoregressive distributed lag model (ARDL) to analyze the factors influencing foreign direct investment (FDI) inflow into Middle Eastern countries illustrates the various approaches and outcomes of previous research. The region's economic, social, and political peculiarities determine the significance and complexity of this

topic. This review considers major works that cover the relationship between the volume of FDI inflows and selected independent variables: GDP, life expectancy, immunization levels, goods trade, consumer price index (CPI), and political stability.

The factors listed above have a significant impact on the inflow of foreign direct investments (FDI) for the following reasons:

1. GDP: Gross domestic product reflects the overall economic activity of a country, and a higher GDP indicates more significant market potential of interest to foreign investors (Pham, M. H., Pham, A., & Dang, C. V. P., 2023). GDP per capita indicates the population's income level and consumer capacity, which also stimulates investment attraction.[2]

2. Life Expectancy: Life expectancy is often used as an indicator of a nation's health and population well-being. Higher life expectancy may indicate social environment stability and the availability of healthy labor resources, key for long-term economic productivity and attractiveness to foreign investors (Zhang et al., 2023).[3]

3. Immunization and Healthcare: Immunization indicators and the state of medical infrastructure reflect a country's ability to maintain a healthy workforce and minimize medical costs for companies, thus increasing the country's attractiveness to foreign investors by reducing potential costs and risks associated with workforce health issues (Talukdar, M. Z. H., & Parvez, M. A., 2017).[4]

4. Merchandise trade: The volume of goods trade as a percentage of GDP indicates the degree of economic openness

[2] [2] Pham, Pham, & Dang, C.V.P., "Determinants of FDI inflows: Aggregate versus country-specific evidence from ASEAN-6"
[3] Zhang et al., "Relationship between FDI inflow, CO2 emissions, renewable energy consumption, and population health quality in China."
[4] Talukdar & Parvez, "Measuring the Impact of Population Health and Education on Foreign Direct Investment: Panel Evidence from 46 Countries."

and integration into global trade. Countries with higher levels of trade are more attractive to foreign investors due to easy market access and the potential to integrate into global value chains (K., Supriani, I., & Fianto, B. A., 2020).[5]

5. Inflation (CPI): The consumer price index and inflation levels can serve as indicators of economic stability. High inflation can deter FDI inflow due to eroding purchasing power and creating uncertainty about future costs and revenues, whereas stable and moderate inflation may indicate healthy economic activity (Haque, M. A., Zhang, B., Arshad, M., & Yasmin, N., 2022)[6].

6. Political Stability is necessary for ensuring a predictable and safe investment environment. Stability reduces risks associated with political course changes, social upheavals, or coups, making a country more attractive for long-term investments. Countries with high levels of political stability can offer a more reliable and predictable environment for foreign investors, thereby stimulating FDI inflows (Basha, M., 2023).[7]

7. Corruption Control Level: Several studies have shown that combating corruption significantly attracts foreign direct investments. High levels of corruption can impede a competitive trading environment and deter foreign investors, emphasizing the need to fight corruption to attract foreign investments.

Najibullah Zaki (2020) found a negative correlation between corruption and the inflow of foreign direct investments, indicating that corruption hinders a competitive trading environment and deters foreign investors from investing in the country.

Veronika Linhartová (2018) confirmed the negative impact of corruption on FDI through regression analysis,

5 Supriani & Fianto, "What drives the inflow of FDI in OIC countries? Evidence from Top 10 hosts of inward FDI flows."
6 Haque et al., "Role of uncertainty for FDI inflow: Panel econometric analysis of selected high-income nations."
7 Basha, "Assessing the Moderating Effect of Political Stability on the Relationship between FDI and Economic Prosperity: The Case of Jordan."

particularly highlighting the significant deterring effect of high levels of corruption on foreign investments.

J. Woo and U. Heo (2009) noted that corruption typically negatively affects the attractiveness of direct foreign investments in non-OECD Asian countries, underscoring the need to fight corruption to attract foreign investments.

Windy Noni Zelina and R. Purwono (2021) demonstrated that the perception of corruption index significantly positively influences the attraction of direct foreign investments, suggesting that better control over corruption enhances a country's ability to attract foreign investments.

Rahim Quazi (2014) presented empirical data from East and South Asia showing a significant negative relationship between the level of corruption and the inflow of FDI. This confirms the "grabbing hand" hypothesis, which asserts that corruption acts as a barrier to foreign investments.

These factors collectively influence foreign investors' decision-making process by demonstrating the potential risks and benefits of investing in a specific country. The combination of economic efficiency, social stability, and quality of governance makes some states more preferred destinations for FDI than others.

Overall, the literature confirms the complexity and multifaceted nature of the factors influencing FDI inflows into Middle Eastern countries. The application of the ARDL model allows for a more detailed analysis of both short-term and long-term relationships between these factors and FDI inflows, considering the dynamics and integration of economic, social, and political variables within the unique context of each country in the region. This nuanced approach enables researchers to capture the intricate ways in which various determinants interact and impact the attractiveness of these countries to foreign investors.

Methodology

This paper employs the Autoregressive Distributed Lag (ARDL) model for panel data, covering 13 Middle Eastern countries from 2013 to 2022. The ARDL model is known for its ability to handle both stationary and non-stationary data and can be specified for combinations of variables with integration orders of I(1) and I(0), but not with I(2) or higher. Here, I(.) denotes the lag operator. Phillips-Perron, Dickey-Fuller, and KPSS tests were conducted to test for stationarity. While building the ARDL model, the optimum lag was selected using criteria such as Akaike Information Criterion (AIC(n)), Hannan-Quinn Criterion (HQ(n)), Schwarz Criterion (SC(n)), and Final Prediction Error (FPE(n)). The ARDL model's equation can be expressed as follows:

$$Y_t = \beta_0 + \sum_{i=1}^{p} \beta_i Y_{t-i} + \sum_{i=0}^{q} \delta_i X_{t-i} + \grave{o}_t.$$

Where $\beta_0, \beta_i, \delta_i$ are coefficients of the equation, Y_t is dependent variable, X_t – vector of independent variables and $\grave{o}_t$ – random errors. This equation indicates that the values of the dependent variable $\sum_{i=1}^{p} \beta_i Y_{t-i}$ depend on its own past values and other variables and their past values $\sum_{i=0}^{q} \delta_i X_{t-i}$.

Data Description

The study uses data on various economic and social indicators for 13 Middle Eastern countries from 2013 to 2022. The datasets, sourced and analyzed from the World Development Indicators (WDI) website [8] contain 130 observations and 10 variables. These variables, sorted in panel data format first by country and then by years, include:

Country: A variable indicating the name of the country.

[8] The World Bank, "World development indicators, DataBank"

Years: A variable reflecting the years of observation.

FDI_inflows: Net foreign direct investments received by the countries (in billion current US dollars).

GDP: Country's gross domestic product (in billion current US dollars).

GDP_p_c: GDP per capita (in current US dollars).

Pop: Population size (in millions).

Life_exp: life expectancy at birth (in years).

Immun: Immunization of children against measles measures the percentage of children aged 12-23 months who received a measles vaccine before 12 months or at any time before the survey. A child is considered adequately immunized against measles after receiving one dose of the vaccine (in percentages).

Merch trade: Ratio of the sum of exports and imports of goods to the country's GDP (in percentages).

CPI: Inflation by consumer prices (in percentages).

Polit stab: Political stability and absence of violence/terrorism measure perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. The percentile rank indicates a country's position among all countries covered by the composite indicator, where zero corresponds to the lowest rank and 100 to the highest. Percentile ranks have been adjusted over time for changes in the composition of countries covered by WGI (on a scale from 0 to 100).

Control_of_corruption: Reflects perceptions of the extent to which public power is exercised for personal gain, including petty and grand forms of corruption and state capture by elites and private interests. The percentile rank indicates a country's position among all countries covered by the composite indicator, where zero corresponds to the lowest rank and 100 to the highest. Percentile ranks have been adjusted over time for changes in the composition of countries covered by WGI (on a scale from 0 to 100).

Preliminary Data Analysis

In descriptive statistics, measures such as mean, standard deviation (sd), median, minimum (min), maximum (max), range, skewness, and kurtosis are employed to summarize and describe a dataset's central tendency, variability, and distribution shape.

Table 1. *Descriptive Statistics*

	mean	sd	median	min	max	range	skew	kurtosis
country*	7.00	3,76	7.00	1.00	13.00	12.00	0.00	-1.24
years*	5,50	2,88	5,50	1.00	10.00	9.00	0.00	-1.25
FDI_inflows	4,86	6,86	2,32	-10.18	27.87	38.04	1,03	0.88
GDP	299.76	266.16	227.89	18,03	1108.57	1090.55	1,06	0.19
GDP_p_c	22767.40	20587.92	19320.81	2439.97	97630.83	95190.86	1,25	1,43
pop	29.88	34.93	9,18	1,26	110.99	109.73	1,03	-0.54
life_exp	77.03	3,49	77.50	68,25	83.35	153,10	-0,66	-0.17
immun	93.92	8,12	98.00	67.00	99.00	32.00	-1,78	2,02
merch_trade	67.03	33,96	63.82	22.67	188.01	165.33	1,55	2,61
CPI	8,67	23,02	2,66	-3.75	171.21	174.95	5,19	30,10
polit_stab	30.58	25.39	19.29	1,42	91.94	90.53	0.71	-0.97
control_of_corr	49.86	24.34	56.77	3,81	87,20	83,39	-0,40	-1.04

Based on the results of the descriptive analysis, the following conclusions can be drawn:

The observation period spans 10 years, from 2013 to 2022.

- The sum of net foreign direct investments in Middle Eastern countries during the mentioned period ranged from -$10.2 billion to $27.9 billion, with an average of $4.9 billion.
- The GDP of the observed countries varied from $18 billion to $1108.6 billion, with an average value of $300 billion, indicating that countries with varying economic sizes were selected for the study.
- GDP per capita also varied from $2440 to $97631, with an average of $22767, indicating that both wealthy and poor countries were included in the study.
- The population size in the selected Middle Eastern countries also varies widely, with the smallest population being 1.3

million (Bahrain 2013) and the largest 111 million people (Egypt 2022).

- The lowest life expectancy at birth was 68 years in Iraq, the highest was 83 years in Israel, and the average was 77 years.
- The population's immunization level during 2013-2022 ranged from 67% to 99%, with an average value of 94%, indicating access to basic medical services.
- The share of trade in goods in the observed countries ranged from 23% in Egypt in 2020 to 188% in the UAE in 2022, with an average of 67%, indicating that the study includes countries highly dependent on and less reliant on external trade.
- Consumer price inflation varied from -3.74% to 171%, with an average value of 8.7%.
- The level of political stability varied from 1.4 to 92, with an average value of 31 on a scale from 0 to 100.
- Control over the level of corruption varies among the selected countries, where the minimum value on a scale from 0 to 100 was 3.8, and the maximum was 87.2, with an average value of 50.

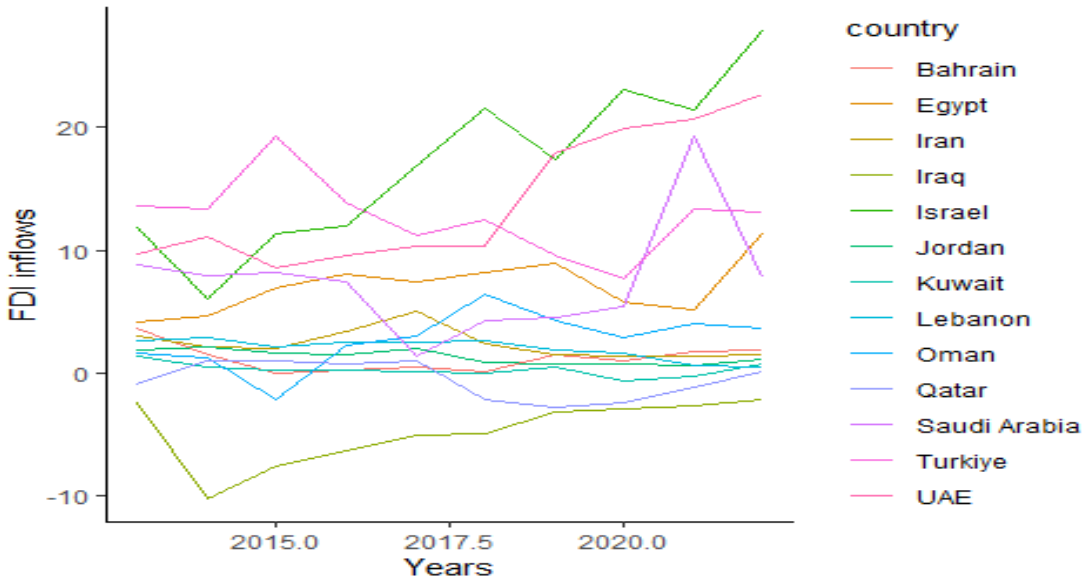

Fig. 1 *Net FDI inflows by country, 2013-2022*

From **Figure 1**, which details the inflow of net foreign direct investments (FDI) by country in the Middle East from 2013 to 2022, the following conclusions can be drawn:

1. Israel leads among all observed Middle Eastern countries regarding net FDI inflow from 2013 to 2022.
2. Iraq received the least amount of FDI compared to other countries in the region.
3. During the period under review, Saudi Arabia, the UAE, Turkey, and Israel experienced significant growth in attracting FDI.
4. Other countries not listed above generally had a stable level of net FDI inflow throughout the period.

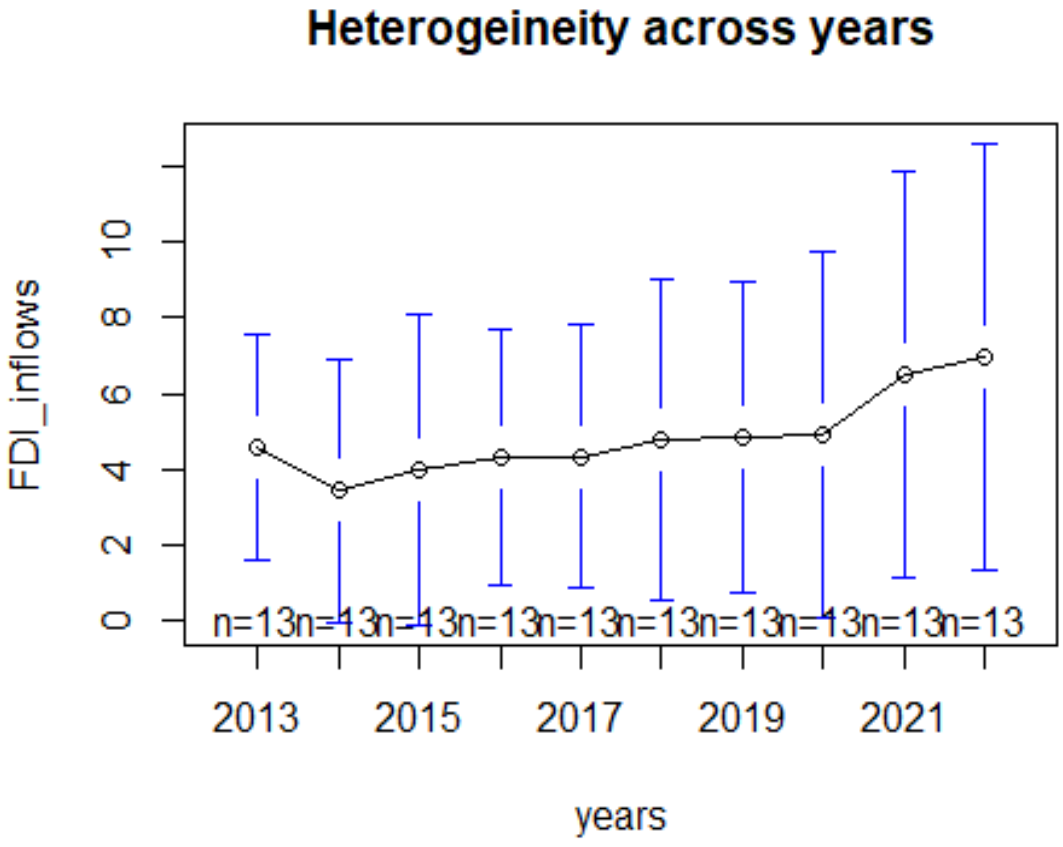

Fig. 2 *Fixed Effects: Heterogeneity Across Years*

Figure 2 illustrates the fixed effects showing year-by-year heterogeneity. We can observe that the volume of net

foreign direct investments (FDI) has gradually increased over the years, as indicated by a much higher measure in 2022 compared to 2013 for Middle Eastern countries. This trend suggests a strengthening of investment attraction over the decade despite fluctuations influenced by external economic factors.

A significant event affecting the investment landscape during this period was the oil overproduction and policy decisions by Saudi Arabia, one of OPEC's most prominent members. In 2014-2015, Saudi Arabia opted not to cut oil production to maintain its market share, halving global oil prices from $100 to $50 per barrel[9] (Fusion Media Limited, 2023). As a result, countries in the Middle East heavily dependent on oil and oil product exports experienced a sharp decline in net FDI inflows due to capital outflows from these countries.

Additionally, the graph shows an increase in heterogeneity after 2016, a consequence of implementing economic diversification policies in the Middle East. For example, in 2016, Saudi Arabia announced its "Vision 2030" national strategy, which includes developing non-oil industrial sectors, investing in tourism, and building mega-projects. This policy shift aims to reduce the economy's dependency on oil revenues and foster sustainable development by attracting investments into various sectors.

9 Fusion Media Limited, "WTI to USD: Crude oil WTI spot to US Dollar Exchange Rate. Investing.com UK."

Table 2. *Correlation matrix*

	GDP	GDP_p_c	pop	life_exp	immun	merch_trade	CPI	polit_stab	control_of_corruption
FDI_inflows	0.58	0.20	0.15	0.37	0.40	0.09	-0.04	-0.02	0.45
GDP		-0.01	0.54	-0.05	0.29	-0.18	0.00	-0.20	0.12
GDP_p_c			-0.53	0.67	0.44	0.36	-0.26	0.71	0.74
pop				-0.62	0.04	-0.51	0.19	-0.53	-0.49
life_exp					0.43	0.24	-0.11	0.40	0.65
immun						0.09	-0.37	0.41	0.62
merch_trade							-0.04	0.58	0.42
CPI								-0.25	-0.37
polit_stab									0.68

The analysis of the correlation matrix constructed to identify determinants of foreign direct investment [10] inflows has affirmed several findings from previous research, demonstrating notable linear relationships between various economic, social, and governance metrics. Here are some key correlations observed:

Strong Positive Correlation between GDP per capita and corruption control: A correlation coefficient r = 0.74 suggests a strong linear relationship between GDP per capita and the level of corruption control. This correlation supports the theory that wealthier nations tend to have better mechanisms to control corruption, which in turn may enhance their attractiveness for FDI (Esener & İpek, 2018);

Strong Positive Correlation between GDP per capita and political stability: With an r = 0.71; this correlation supports the idea that higher economic output per person correlates with more stable political environments. Stable political environments are more

10 Esener & İpek, "The Impacts of Public Expenditure, Government Stability and Corruption on Per Capita Growth: An Empirical Investigation on Developing Countries."

conducive to investments, providing a predictable business environment [11]

Moderate Positive Correlation between corruption control and Political Stability: An r = 0.68 indicates that countries with better control of corruption also tend to have higher levels of political stability. This reflects the interdependence of good governance and stable political systems, which are essential for sustainable economic development [12]

Moderate Positive Correlation between GDP per capita and life expectancy: The correlation coefficient of r = 0.67 highlights that higher income levels per capita are associated with better health outcomes, reflected in higher life expectancy. This relationship underscores the role of economic prosperity in enhancing overall living conditions, which can attract more FDI by creating a healthier workforce [13]

Moderate Positive Correlation between corruption control and life expectancy: With a correlation coefficient of r = 0.65, this suggests that effective corruption control contributes to better health and social systems, which in turn can lead to higher life expectancy [14]

Moderate Positive Correlation between corruption control and immunization levels: An r = 0.62 indicates that countries with better corruption control also have higher immunization rates. This correlation could be due to the effective allocation and use of resources in countries with low levels of corruption, resulting in better health care services, including immunization Moderate Negative Correlation between[15] Population Size and Life Expectancy: A correlation coefficient of r = -0.62 shows

[11] Esener & İpek, "The Impacts of Public Expenditure, Government Stability and Corruption on Per Capita Growth: An Empirical Investigation on Developing Countries."
[12] Gerlagh & Pellegrini, "Causes of Corruption: A Survey of Cross-Country Analyses and Extended Results. Economics of Governance," 9, 245-263.
[13] Pritchett & Summers, "Wealthier is Healthier."
[14] Gupta, Davoodi & Tiongson, "Corruption and the provision of health care and education services," 00/116.
[15] Fielding, Ledezma & Torres, "A simultaneous equation model of economic development and income inequality," 4, 279-301

that larger populations are associated with lower life expectancy. This may be due to the increased challenges in providing uniform healthcare services and maintaining living standards in more populous countries [16]

Construction and Analysis of the ARDL Model

To construct the model, the following research steps were performed: checking data stationarity, determining optimal lags, estimating model parameters, applying the ARDL bounds test, using the Vector Error Correction Model (VECM), conducting diagnostic checks, testing for serial correlation, examining model stability, testing the model for joint integration (cointegration), and analyzing the model's residuals for normality of distribution, homoscedasticity, and absence of autocorrelation. After skipping the technical details of econometric analysis, the ARDL model is presented below.

```
##
## Time series regression with "ts" data:
## Start = 3, End = 130
##
## Call:
## dynlm(formula = as.formula(model.text), data = data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -8.1173 -1.4731  0.0435  1.3373 11.2360
##
## Coefficients:
##                              Estimate Std. Error t value      Pr(>|t|)
## (Intercept)               -35.350759  10.164928  -3.478      0.000713 ***
## GDP.t                       0.011920   0.003293   3.620      0.000438 ***
## GDP.1                      -0.010868   0.003215  -3.380      0.000988 ***
## pop.t                       0.041608   0.016360   2.543      0.012296 *
## life_exp.t                  0.420586   0.129179   3.256      0.001482 **
## merch_trade.t               0.026502   0.011622   2.280      0.024409 *
## polit_stab.t               -0.164758   0.040980  -4.020      0.000104 ***
## polit_stab.1                0.118764   0.041244   2.880      0.004744 **
## control_of_corruption.t     0.175874   0.041789   4.209 0.00005091990 ***
## control_of_corruption.1    -0.124701   0.041615  -2.997      0.003340 **
## FDI_inflows.1               0.527436   0.081538   6.469 0.00000000245 ***
## FDI_inflows.2               0.194450   0.074995   2.593      0.010743 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3.059 on 116 degrees of freedom
## Multiple R-squared:  0.821,  Adjusted R-squared:  0.804
## F-statistic: 48.37 on 11 and 116 DF,  p-value: < 0.00000000000000022
```

Fig. 3 *ARDL model results: Influencing factors on FDI*

[16] Dyson, "Population and development: The demographic transition."

Model Equation

$$FDI_t = -35.35 + 0.012 \cdot GDP_t - 0.011 \cdot GDP_{t-1} + 0.042 \cdot pop_t + 0.421 \cdot life\_exp_t + 0.027 \cdot merch\_trade_t - 0.165 \cdot polit\_stab_t + 0.119 \cdot polit\_stab_{t-1} + 0.176 \cdot control\_of\_corruption_t - 0.125 \cdot control\_of\_corruption_{t-1} + 0.527 \cdot FDI_{t-1} + 0.194 \cdot FDI_{t-2} + \grave{o}_t$$

All variables presented in the Model equation undergo a t-test for the significance of coefficients. Other variables, due to their insignificant effect on the dependent variable, were excluded from the model. The model passes the F-test for the significance of the determination coefficient $p_{value} = 2.2 \cdot 10^{-16} < 0.05$

The determination coefficient **R^2** is **82.1%**, indicating that changes in indicators such as GDP and previous year's GDP, population size, life expectancy, the share of goods trade in GDP, level of political stability and level of political stability in the previous year, level of corruption control and level of corruption control in the previous year, and inflow of net foreign investments for the last two years explain **82.1%** of the change in the inflow of current net foreign investments. The adjusted determination coefficient **adjR^2** is **80.4%**.

GDP (in billions of current US dollars): Each increase in GDP by 1 billion US dollars is associated with an increase in FDI inflows by 0.012 billion US dollars, which may reflect the country's strong economic attractiveness to foreign investors.

Population (in millions): Each million people in the population is associated with an increase in FDI inflows by 0.042 billion US dollars. This may indicate that large markets with large populations attract foreign investors.

Life expectancy (in years): An average life expectancy by one year is associated with an increase in FDI inflows by 0.421 billion US dollars. This may indicate that a healthier

population and better quality of life make the country more attractive for foreign investment.

Merchandise trade (as a percentage of GDP): An increase in the share of goods trade in GDP by one percent is associated with an increase in FDI inflows by 0.027 billion US dollars, reflecting the relationship between economic openness and attractiveness for foreign investors.

Political stability and absence of violence/terrorism (as a percentage): An increase in the political stability indicator by one percent in the previous year is associated with increased FDI inflows by 0.119 billion US dollars, highlighting the significance of a stable political climate for attracting foreign investment.

Corruption control (as a percentage): Improvement in corruption control by one percent is associated with an increase in FDI inflows by 0.176 billion US dollars, while a decrease in the corruption control indicator from the previous year by one percent is associated with a reduction in FDI inflows by 0.125 billion US dollars. This emphasizes that current improvements in corruption control positively affect FDI, but previous levels of corruption can have long-term negative consequences for attracting FDI.

Net inflow of direct foreign investments (in billions of current-year US dollars): Each increase in net inflow of direct foreign investments by 1 billion US dollars in the previous year is associated with an increase in net inflow of direct foreign investments by 0.527 billion US dollars, and an increase in net inflow of direct foreign investments by 1 billion US dollars two years ago is associated with an increase in net inflow of direct foreign investments by 0.194 billion US dollars, reflecting the long-term nature of investment cooperation and investment projects.

Assumptions of the ARDL model

The ARDL model's quality rests on three foundational assumptions that guide its evaluation:

1. The distribution of residuals,
2. The absence of autocorrelation among these residuals,
3. *Homoscedasticity.*

Ensure that residuals are normally distributed in the analysis of ARDL models, and various statistical tests that assume normality can be applied. Similarly, residual autocorrelation can distort statistical tests, making them unreliable for hypothesis testing and confidence interval construction. Thus, tests such as the Breusch-Godfrey and Box-Ljung, which showed no autocorrelation of residuals (p-values > 0.05), validate one aspect of the model's reliability and the integrity of estimations provided.

However, the model shows some challenges concerning homoscedasticity, as indicated by the studentized Breusch-Pagan test (p-value = 0.008081), suggesting heteroscedasticity is present. This deviation from homoscedasticity implies that the variance of residuals is not constant across observations. While heteroscedasticity primarily affects the efficiency of coefficient estimates rather than their unbiasedness or consistency, it could inflate standard errors, leading to misleading inferences about significance levels. Nevertheless, for time-constrained data samples spanning a decade (2013-2022), Bada & Liebl (2014) suggest that heteroscedasticity may not significantly impact the model's coefficient estimates, which could still be considered robust for practical applications.

Furthermore, the Shapiro-Wilk normality test results indicate a departure from the normal distribution of residuals (p-value = 0.001403). The lack of normal distribution in residuals is common in panel data with a time dimension, often not undermining the model's utility in predicting and interpreting dynamic processes. In this context, despite some

deviations from ideal statistical conditions, the ARDL model displays commendable performance metrics such as a low Mean Absolute Error (MAE) and other error statistics, indicating a good fit between the model predictions and the observed data. These results underscore the model's applicability, providing reliable insights despite the noted statistical limitations.

Economic interpretation of the results

The study of net inflow of direct foreign investments (FDI) in 13 Middle Eastern countries from 2013 to 2022 showed that economic, demographic, political, and social factors collectively have a strong predictive potential, explaining 82.1% of the variability in FDI, as confirmed by the determination coefficient R^2. The adjusted determination coefficient $adjR^2$, equaling 80.4%, also indicates a high degree of explanation of changes in FDI by the introduced predictors, considering the number and variability of data. Let us consider each factor in more detail:

GDP: The increase in GDP is associated with the growth of FDI, reflecting the general economic influence of countries on investment flows. Economic growth makes a country more attractive for foreign investments by increasing the market for sales and potential for scaling businesses.

Population: The country's population is associated with an increase in FDI, indicating market potential and labor availability. A larger population may create greater domestic demand and provide more business opportunities.

Life expectancy indicates the influence of social and healthcare factors on a country's economic attractiveness. Higher life expectancy may signal a better quality of life and, consequently, better potential for consumption and production.

Merchandise trade: Reflects the degree of the country's integration into the global economy. Openness to trade may

increase FDI flows by creating favorable conditions for international business and integration into global value chains.

Political stability: Emphasizes the importance of a stable political climate. Countries with more stable political conditions and less violence and terrorism appear to foreign investors as safer and more reliable partners.

Corruption control: Improvement in corruption control indicators is closely related to increased FDI, underscoring investors' desire to work in a more transparent and predictable business environment. This also indicates that efforts to combat corruption may be an important signal for investors looking for stability and reliability.

FDI inflows in past periods: Positive coefficients for FDI inflows in previous years underscore the long-term nature of investment cooperation and the possible presence of a 'trust effect', where previous investments attract subsequent ones due to establishing a reputation and creating a network of connections.

Overall, these results indicate that for Middle Eastern countries, economic indicators, socio-demographic characteristics, political stability, and efforts to combat corruption play a key role in attracting and retaining foreign investments. The study results showed that the most significant influence on the inflow of direct foreign investments is exerted by indicators of the inflow of direct foreign investments in previous years, life expectancy at birth, level of corruption control, and level of political stability. This work provides a detailed account of how certain factors influence the inflow of direct foreign investments into Middle Eastern countries. The findings can have advisory implications for researchers from Central Asian countries when analyzing priority reform directions that facilitate the maximum inflow of direct foreign investments into the region.

Conclusion and Recommendations for Uzbekistan

The study of FDI inflows into Middle Eastern countries from 2013 to 2022 highlights the critical role of economic, demographic, political, and social factors in attracting foreign investments. The findings demonstrate that GDP growth, population size, life expectancy, trade openness, political stability, and corruption control significantly influence FDI inflows. Reinforcing past FDI inflows further underscores the importance of building a stable and attractive investment environment.

For Uzbekistan, these findings offer practical insights into optimizing its investment climate. Based on the results of this study, the following recommendations can be made:

1. **Strengthen Political Stability and Governance:** A predictable political environment is crucial for attracting long-term foreign investments. Strengthening the rule of law, reducing political risks, and maintaining social stability will enhance Uzbekistan's attractiveness to international investors.
2. **Enhance Anti-Corruption Measures:** The study shows corruption negatively affects FDI inflows. Uzbekistan should continue its anti-corruption efforts, increasing transparency and accountability in business regulations to foster investor confidence. Establishing independent regulatory bodies and improving law enforcement mechanisms will further strengthen governance.
3. **Invest in Human Capital Development:** Life expectancy and workforce health significantly attract FDI. Improving healthcare, education, and overall living standards will contribute to a more productive labor force, making Uzbekistan a more attractive destination for foreign investments. Expanding vocational training and aligning educational programs with industry needs can further enhance labor market efficiency.

4. **Promote Trade Openness and Economic Diversification:** Countries with higher trade-to-GDP ratios tend to attract more FDI. To create a more open and competitive economy, Uzbekistan should continue expanding its trade agreements, simplifying customs procedures, and integrating into global value chains. Facilitating export-oriented industries and improving transport infrastructure will enhance regional trade connectivity.
5. **Leverage Past FDI Successes:** The study indicates that previous FDI inflows have a reinforcing effect on future investments. Uzbekistan should focus on maintaining strong relationships with existing investors, promoting reinvestment, and showcasing success stories to attract new investors. Establishing investment promotion agencies and fostering public-private partnerships will create a more investor-friendly ecosystem.
6. **Focus on Sustainable Growth Policies:** Economic growth remains a key determinant of FDI. To create a favorable investment climate, Uzbekistan should prioritize macroeconomic stability, inflation control, and infrastructure development. Encouraging green investments, improving energy efficiency, and supporting technological innovation will also contribute to long-term economic sustainability.
7. **Develop Special Economic Zones (SEZs):** Uzbekistan can enhance FDI inflows by developing specialized economic zones with tax incentives, streamlined regulatory processes, and improved infrastructure. SEZs can attract multinational corporations and facilitate knowledge and technology transfer.

Implementing these recommendations will enhance Uzbekistan's FDI attractiveness. Strategically aligning economic policies with global investment trends will be essential for the country’s long-term economic prosperity.

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