

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

أثر الحوكمة والإنفاق العام على النمو الاقتصادي في دول المينا - دراسة قياسية باستعمال بيانات البانل
خلال الفترة 2002 - 2022

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Abstract:

This study aims to analyze the impact of governance and public spending on economic growth in MENA countries during the period 2002-2022 using panel data and models. Through its six models, the study concluded that political stability, a key indicator of governance, and foreign direct investment had a positive and significant impact, while government spending directed towards consumption had a negative impact on economic growth in these countries.

Keywords: Governance; government spending; economic growth; MENA countries; panel models .

JEL Classification Codes : G34, O40.

ملخص:

تهدف هذه الدراسة إلى تحليل أثر الحوكمة والإنفاق العام على النمو الاقتصادي في دول المينا خلال الفترة 2002-2022 باستخدام بيانات ونماذج البانل، وقد خلصت الدراسة من خلال نماذجها الست إلى أثر إيجابي ومعنوي لكل من الاستقرار السياسي الذي يعتبر أحد المؤشرات الأساسية للحوكمة والاستثمار الأجنبي المباشر وسلبى بالنسبة للإنفاق الحكومي الموجه للاستهلاك على النمو الاقتصادي في هذه الدول.

كلمات مفتاحية: الحوكمة، الإنفاق الحكومي، النمو الاقتصادي، دول المينا، البانل.

تصنيفات JEL: G34، O40.

INTRODUCTION:

Economic growth is considered an important indicator that points to the existing economic situation in any country in the world. Therefore, it largely reflects the status of other economic indicators targeted by various economic policies, whether fiscal or monetary. For example, following the Great Depression in 1929 and the accompanying significant structural imbalances in the global economy, the view of economic thinkers regarding the application and effectiveness of various economic policies changed. Fiscal thought focused on public spending, both its consumption and investment aspects. They considered it the most effective and influential of fiscal policies on economic growth. Meanwhile, monetary economists turned to implementing monetary policies that control the movement of money, financial investments, and exchange rates, to confront inflation and problems in financing industrial and service projects and institutions that directly affect economic growth. For instance, the 2008 economic crisis affected all aspects of life, leading to political instability, personal financial problems, and a growing number of corporate bankruptcies. Although these are serious issues, merely implementing a government policy that injects money into the economy is not an appropriate means to achieve economic recovery and long-term economic development unless it is coupled with an effective and efficient governance system. (Bassam A, 2013)

Governance and its quality are also considered crucial indicators that play an important role in economic life through their direct impact on the effectiveness of adopted economic policies for achieving development. Mr. Kofi Annan emphasized many times that "good governance is perhaps the single most important factor in eradicating poverty and promoting development". (United Nations, 1998)

The International Monetary Fund also expresses the strong link between good governance and economic development, stating that "strengthening good governance in all its aspects, including ensuring the rule of law in improving the efficiency of public sector accountability and addressing corruption, can make economies prosper" . (International Monetary Fund, 1997)

Research Problem:

The goal of achieving economic growth is to improve living conditions and achieve prosperity for people by adopting effective economic policies. This role is undertaken by governments, but it faces certain obstacles such as the ruling system, corruption, and the low level of justice application. Therefore, our problem revolves around: What is the extent of the impact of applying good governance indicators and public spending on economic growth in MENA countries?

Importance of Study:

Despite the existence of many studies that addressed the relationship between economic growth and public spending on the one hand, and the impact of governance on economic growth rates on the other, we found a scarcity of studies that highlight the impact of both governance and public spending on economic growth. Given this scarcity, the study examines

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

the effects of both governance and public spending on economic growth in North African countries and GCC countries, due to the diversity of their governance systems and the application of many economic experiments in these countries. This is an attempt to contribute to understanding the reason for the slowdown in growth despite the available potential and resources.

Research Hypotheses:

- There is a positive impact of good governance on economic growth in MENA countries.
- The effectiveness of the financial policy adopted by MENA governments is linked to the quality of governance in these countries.
- There is an impact of public spending on economic growth in MENA countries.

Study Methodology:

We will study this topic using a descriptive, analytical, and quantitative approach to demonstrate the impact of governance and public spending on economic growth in MENA countries, both theoretically and practically. We will also clarify the importance of applying governance standards in achieving economic growth and the evolution of GDP in the countries studied.

1. Theoretical Framework

1.1 Previous Studies:

- **Study by Muhammad Azam Khan and Chandra Emirullah (2014):** "The role of governance in economic development Evidence from some selected countries in Asia and the Pacific." This study used panel models (fixed and random effects) and concluded that corruption is negatively and statistically significantly correlated with GDP per capita, contrary to the effects of control variables. It found a negative correlation rate and a statistically significant openness to trade. (Khan & Emirullah, 2014)
- **Study by Hamid Lahouij (2017):** From Eastern Illinois University, titled "Governance and Economic Growth in Developing Economies: A comparative study." This study highlighted the relationship between governance and economic growth using cross-country time series data for countries with low, middle, and high per capita income. It concluded that there is a positive relationship between governance standards and economic development in countries, regardless of their growth size, although the results contradict other studies. (Lahouij, 2017)
- **Study by Abdelbari Ayadh and Muhammad Yahia Bensaci (2019):** Titled "Mechanisms of Good Governance as a Tool to Combat Corruption and its Impact on Economic Growth: A comparative-quantitative study between developed and developing countries (1996-2016)." This research paper combined the reality and

impact of good governance indicators as a tool to combat corruption, considering them explanatory variables for the dependent variable, economic growth. This study was based on the hypothesis that economic growth increases and develops as its indicators improve, especially concerning good governance policy, which is reflected by several mechanisms, most importantly the corruption control index, the rule of law, and political stability. To achieve the study's objective, data on GDP at constant 2010 US dollars were used as the dependent variable and a measure of economic growth for the two sample groups of countries, and three basic indicators of good governance (control of corruption, political stability, accountability) as independent variables. This was done using panel time series models, starting with static analysis and studying the three related models (PRM / FEM / REM), then comparing them to obtain the best static model for this study. The results concluded that the Fixed Effects Model (FEM) was ideal for the developing country sample and the Random Effects Model (REM) for the developed country sample, showing a short-term relationship between the corruption factor as a good governance indicator and economic growth. (Ayadh and Bensaci)

- **Study by Lyes Choubar and Issam Jawadi (2012):** "Good Governance and Economic Growth in Arab Countries: An empirical study using panel data during the period 2000-2012." This study aimed to identify the impact of good governance variables on economic growth in Arab countries during the period 2000-2012, using econometric tools represented by panel data. They found a positive and significant impact of regulatory frameworks and the rule of law variables on economic growth. They also concluded that there was no impact of voice and accountability, political stability, government effectiveness, and control of corruption on economic growth in Arab countries during the period 2000-2012. (Lyes and Djawadi)
- **Study by Mohamed Djellouli, Boumediene Mohamed Amine, and Djeddi Chawki (2022):** "The Impact of Government Effectiveness and Public Spending on Economic Growth: An empirical study on a group of Arab African countries." This research paper aimed to study the impact of government spending and government effectiveness on economic growth in a sample of 6 Arab African countries using panel models and cointegration during the period 2002-2018. The study concluded that there is a positive relationship between government spending and economic growth on one hand, and a negative relationship between government effectiveness and economic growth on the other, in addition to a long-term relationship between the study variables. (Djellouli, Boumediene and Djeddi)
- **Study by Lilia Ghadabna (2015):** "The Relationship between Government Spending and Economic Growth in Algeria: An empirical study for the period 1990-2012." This study aimed to test the causality between real total government spending and real GDP, and to test the validity of Wagner's Law hypothesis for the Algerian economy using annual data for the period 1990-2012. The Augmented Dickey-Fuller (ADF) test showed that the variables were not stationary at the level, except for real GDP, and became stationary after taking the first difference. Applying the cointegration method using the Vector Error Correction Model (VECM), and through the causality test, the

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

cointegration results indicated a long-term relationship between GDP and total government spending in Algeria at a 5% significance level. Granger causality results also showed a unidirectional relationship from total government spending towards GDP, supporting the Keynesian theory that spending causes economic growth, and not as Wagner's Law hypothesis suggests. (Ghadabna)

1.2 Economic Growth

The term economic growth constitutes an important part of economic theory, as its increase expresses an increase in wealth within a country. It answers, in one way or another, many questions, most importantly the difference in the wealth of the same country when studying its economic situation over different past or present years. It is an indicator that clearly expresses the reason for the existence of developing and developed countries. Therefore, the concept of economic growth is a quantitative concept that expresses an increase in production in the long run, and thus it is a result of successive economic expansion and a mirror reflecting the path of the economy. It is an important indicator through which the level of individual well-being can be expressed. For this reason, the countries of the world have been classified into three levels: developed, developing, and underdeveloped, based on the concept of development, of which economic growth is a major component. (Al-Jassar, 2020, p. 35)

1.3 Good Governance

the World Bank Institute, under the supervision of Daniel Kaufmann and others, established six (6) indicators for good governance at the global level (Worldwide Governance Indicators), which are as follows: (Kaufmann, Aart, & Massimo, 2010)

- **Voice and Accountability (VA):** This refers to the extent to which citizens of a country can participate in selecting their government and in the decision-making process, in addition to freedom of expression, freedom of association, and free media.
- **Political Stability and Absence of Violence/Terrorism (PSAV):** This indicator expresses the likelihood of the government being destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism, and its ability to effectively formulate and implement sound policies.
- **Government Effectiveness (GE):** This expresses the quality of public services, the quality of the civil service and its degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to these policies.
- **Regulatory Quality (RQ):** This means the government's ability to formulate and implement sound policies and regulations that permit and promote private sector development while respecting citizens and the state for the institutions that govern economic and social interactions among them.

- **Rule of Law (RL):** This refers to the extent of agents' confidence in and adherence to the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, in addition to the likelihood of crime and violence.
- **Control of Corruption (CC):** This refers to the extent to which public power is exercised for private gain, including small and large forms of corruption, as well as the "capture" of the state by elites and private interests. It also means not hesitating to expose cases of corruption in the state, referring them to the judiciary, and exposing and holding corrupt individuals accountable. (LANGBEIN and STEPHEN 354)

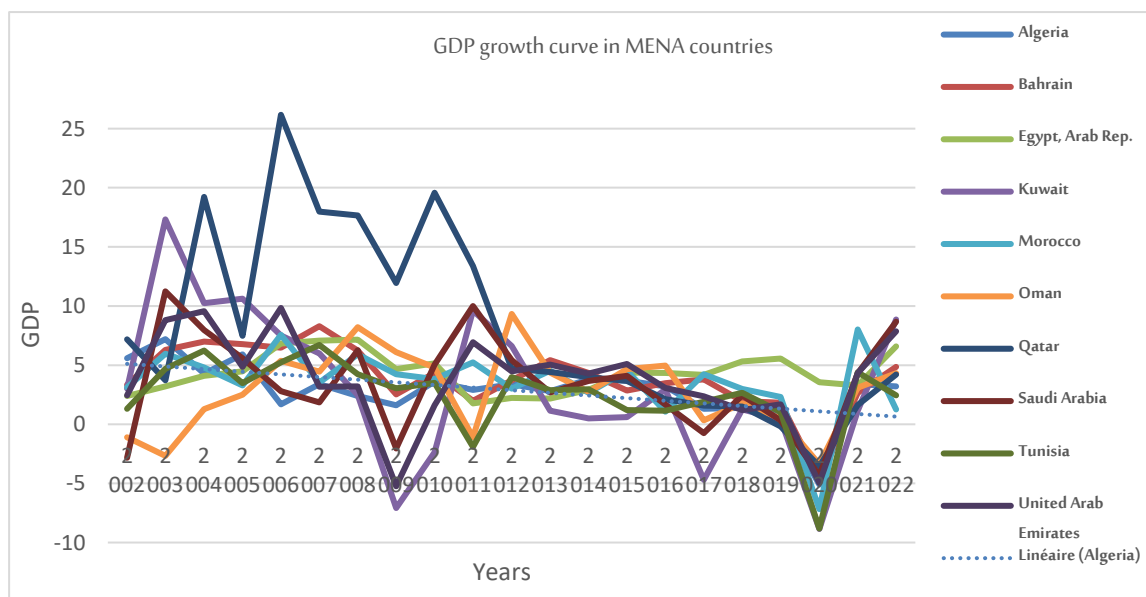
1.4 Public Spending

Public expenditure is defined as: "an amount of money issued from the state treasury by its various administrations, bodies, and ministries, to meet the general needs of society". It is also defined as: "a monetary amount spent by a public person with the intention of achieving public benefit". (Aoussif, Saad, & Mushtar, 2023, p. 20)

1.5 Evolution of GDP, Governance Indicators:

- **Evolution of GDP:** The following Figure N°(01) illustrates the evolution of GDP in the ten MENA countries studied.

Figure N°(01): illustrates the evolution of GDP in the ten MENA countries studied.



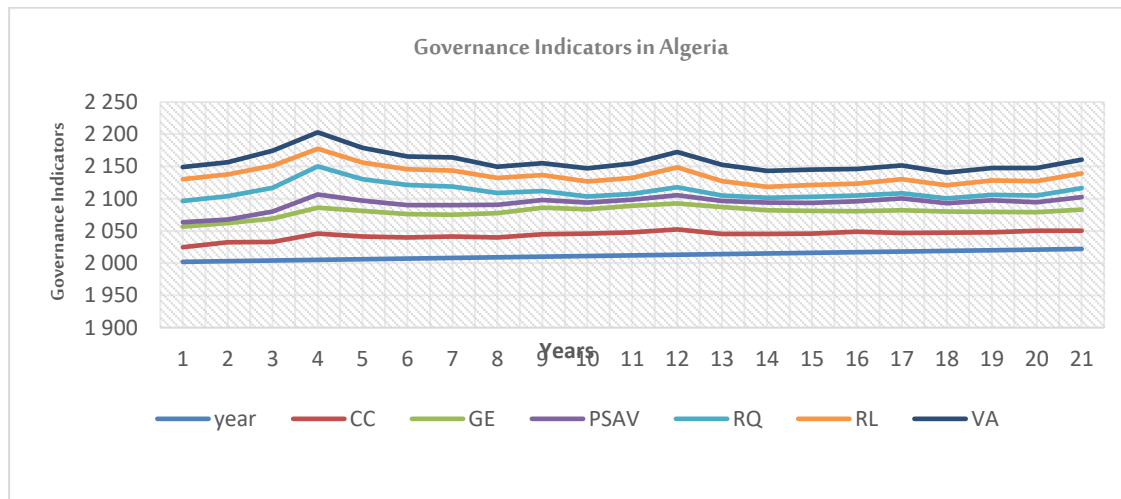
Source: Prepared by the researchers based on the database of this research.

From Figure N°(01), we observe that most countries achieved good rates in their GDP growth, such as the Arab Gulf states, Algeria, and Egypt. For example, Qatar's GDP growth rate reached 26.17% in 2006, which is attributed to rising oil prices and the political and security stability in that country. However, it recorded its lowest growth rate in 2020 at -3.55%, a consequence of the COVID-19 pandemic. Meanwhile, Algeria achieved its highest rates in 2003 with a rate of 7.2%, due to rising oil prices, Algeria's exit from the "black decade," improved security conditions, and a better investment climate. However, 2020 saw

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

the lowest growth rates at -5.1%, due to the global COVID crisis 2019 and its impact on the global economy.

- **Evolution of Governance Indicators in Algeria:**
- **Figure N°(02): Evolution of Governance Indicators in Algeria**



Source: Prepared by the researchers based on the database of this research

From Figure N°(02), we observe that governance indicators showed stability throughout the study period, especially in the early years of the second millennium. During this time, Algeria experienced security stability, strengthened social justice, transparency in administrative performance, and a democratic governance system.

2. Method and Tools:

In this study, we used cross-sectional time series data for: economic growth (GDP) as a dependent variable and seven independent (explanatory) variables. Six of these are Kaufmann's good governance indicators: Voice and Accountability (VA), Political Stability and Absence of Violence (PSAV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). Additionally, government consumption expenditure (EXPc) was included, along with auxiliary variables: Net Foreign Direct Investment flows (FDI_{gdp}), Trade (MT), and Inflation (INF). The data covers a period from 2002 to 2022, spanning 21 years, and represents data from 10 MENA countries. These data were obtained from the World Bank database (World Development Indicators WDI, Worldwide Governance Indicators WGI).

Three panel models were used: Pooled Regression Model (POLS), Fixed Effects Model (FEM), and Random Effects Model (REM). The best model for estimating the general study model was chosen after descriptive analysis of the study sample variables through means, standard deviations, and minimum and maximum values. We used 210 observations for each variable ($21 \times 10 = 210$). The data is considered a long-term cross-sectional data series because ($T > N$), where $T = 21$ represents the number of periods (years) and $N = 10$ represents the number

of sections (countries). The data is considered an unbalanced cross-sectional data series due to missing values for the government consumption expenditure (EXPc) variable.

3. General Model of the Study:

$$Y_{it} = a + \beta X_{it} + \dots + U_{it} \quad i = 1, 2, \dots, N \quad t = 1, 2, \dots, T$$

$$GDP_{it} = a + \beta_1 CC_{it} + \beta_2 EXPc + \beta_3 FDIgdp_{it} + \beta_4 MT_{it} + \beta_5 INF + e_{it} \dots (1)$$

$$GDP_{it} = a + \beta_1 GE_{it} + \beta_2 EXPc + \beta_3 FDIgdp_{it} + \beta_4 MT_{it} + \beta_5 INF + e_{it} \dots (2)$$

$$GDP_{it} = a + \beta_1 PSAV_{it} + \beta_2 EXPc + \beta_3 FDIgdp_{it} + \beta_4 MT_{it} + \beta_5 INF + e_{it} \dots (3)$$

$$GDP_{it} = a + \beta_1 RQ_{it} + \beta_2 EXPc + \beta_3 FDIgdp_{it} + \beta_4 MT_{it} + \beta_5 INF + e_{it} \dots (4)$$

$$GDP_{it} = a + \beta_1 RL_{it} + \beta_2 EXPc + \beta_3 FDIgdp_{it} + \beta_4 MT_{it} + \beta_5 INF + e_{it} \dots (5)$$

$$GDP_{it} = a + \beta_1 VA_{it} + \beta_2 EXPc + \beta_3 FDIgdp_{it} + \beta_4 MT_{it} + \beta_5 INF + e_{it} \dots (6)$$

The study model consists of equations with the following parameters:

- GDP_{it} : Dependent variable
- CC, GE, PSAV, RQ, RL, VA, EXPc: Independent variables
- FDIgdp, MT, INF: Auxiliary variables
- i : Represents the sections (countries)
- t : Represents the time from 2002 to 2022
- β : Represents the coefficients of the independent variables
- e : Represents the residuals

Results and Discussion:

3.1 Descriptive Statistics:

Table N° (01): Descriptive Statistics

Variables	Observations	Means	Standard Deviations	Min	Max
GDP	210	3.869918	4.43714	-8.855279	26.17025
CC	210	56.6818	17.18654	22.75132	91.38756
GE	210	57.0612	15.55457	24.03846	90.47619
PSAV	210	43.41519	24.95003	5.527638	92.46231
RQ	210	54.07957	18.44936	7.142857	82.85714
RL	210	56.02409	14.6973	16.66667	81.42857
VA	210	21.53843	11.01872	2.347418	56.52174
EXPc	203	16.6776	4.678198	6.732998	29.32164
FDIgdp	210	2.43991	2.473553	-2.760018	15.75087
MT	210	76.55039	30.86618	21.51127	188.0053
INF	210	5.706251	10.32242	-25.95842	33.7511

Source: Prepared by the researchers based on STATA 17.0 output.

From Table N° (01), we observe that the number of observations for each variable is 210, except for the government consumption expenditure variable (EXPc) with 203 observations. As for the means, for example, we found that the average economic growth is estimated at (3.869918), with (26.17025) as the maximum value and (-8.855279) as the minimum value.

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

Regarding the governance variables, all have positive values, indicating that all selected sample countries are characterized by relatively good governance systems and positive indicators in applying good governance principles. The same applies to the remaining variables, all with positive mean values. We also observed low values in foreign direct investment and an inflation problem in many of the selected sample countries, and a very high volume of trade.

3.2 Correlations:

Table N° (02): Correlations

	GDP	CC	GE	PSAV	RQ	RL	VA	EXPc	FDIgdP	MT	INF
GDP	1.0000										
CC	0.1677	1.0000									
GE	0.1238	0.9107	1.0000								
PSAV	0.2272	0.8252	0.7428	1.0000							
RQ	0.1301	0.8400	0.8523	0.7072	1.0000						
RL	0.1134	0.8495	0.8386	0.7317	0.9051	1.0000					
VA	-0.0310	0.0262	-0.1059	0.0347	-0.1328	-0.0358	1.0000				
EXPc	0.2931	-0.0149	-0.1257	-0.0612	-0.0150	0.0301	-0.0030	1.0000			
FDIgdP	0.2695	0.1703	0.0652	0.2014	0.1299	-0.1368	-0.2534	0.1001	1.0000		
MT	0.0332	0.6877	0.7364	0.5236	0.6405	0.5610	0.1251	-0.1983	0.2770	1.0000	
INF	0.2749	-0.0662	-0.1194	-0.0089	-0.1089	-0.1103	0.0161	-0.3268	0.1123	-0.0609	1.0000

Source: Prepared by the researchers based on STATA 17.0 output.

From Table N° (02), we observe a slight inverse correlation of (-0.0310) between the voice and accountability index and economic growth, and weak positive correlations between the remaining five indicators and economic growth (0.1677, 0.1238, 0.2272, 0.1301, 0.1134). Also, there are weak positive correlations between economic growth and the other auxiliary explanatory variables (0.2931, 0.2695, 0.0332, 0.2749).

3.3 Pooled Regression Model (POLS):

Table N° (03): Pooled Regression Models (POLS)

VAR	(POLS) GDP	(POLS) GDP	(POLS) GDP	(POLS) GDP	(POLS) GDP	(POLS) GDP
EXPC	-0.219*** (0.0654)	-0.1738*** (0.066)	-0.190*** (0.0646)	-0.202*** (0.0669)	-0.204*** (0.0672)	-0.176*** (0.0676)
FDIgdP	0.432*** (0.118)	0.395*** (0.120)	0.429*** (0.118)	0.357*** (0.121)	0.379*** (0.121)	0.382*** (0.125)
MT	-0.0495*** (0.013)	-0.0383*** (0.0146)	-0.0348*** (0.0116)	-0.0311** (0.0130)	-0.0265** (0.0123)	-0.00792 (0.0105)
INF	0.0762*** (0.0289)	0.0895*** (0.0297)	0.0737** (0.0289)	0.0845*** (0.0296)	0.0833*** (0.0297)	0.0805*** (0.0302)
CC	0.0963*** (0.0222)					
GE		0.0784*** (0.0270)				
PSAV			0.0562*** (0.0128)			
RQ				0.0573*** (0.0201)		
RL					0.0633*** (0.0234)	
VA						0.00062 (0.0264)
Constant	4.378*** (1.577)	3.777** (1.754)	5.823*** (1.527)	5.216*** (1.595)	4.390*** (1.687)	6.051*** (1.670)
F (5, 197)	12.11***	9.65***	12.24***	9.59***	9.40***	7.65***
Obs	203	203	203	203	203	203
R-squared	0.2352	0.196	0.237	0.195	0.192	0.162

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Prepared by the researchers based on STATA 17.0 output.

From Table N° (03), we observe that all six models are significant, meaning they are statistically acceptable. Fisher's values for the six models are (12.11, 9.65, 12.24, 9.59, 9.40, 7.65) respectively, with a significance level of less than 1%. The R-squared values are (0.162, 0.192, 0.195, 0.237, 0.196, 0.2352). As for the model parameters, we found that the first five models have significant explanatory variables. Two of these have a negative impact (negatively affecting economic growth): government consumption expenditure and trade. The other variables have a positive impact (positively affecting economic growth), and these are:

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

control of corruption, government effectiveness, political stability, regulatory quality, rule of law, net foreign direct investment flows, and inflation.

For the model related to the voice and accountability indicator of good governance, we found two explanatory variables that are not significant: trade and voice and accountability. Three variables are significant, two of which have a positive impact on economic growth: net foreign direct investment flows and inflation. The government consumption expenditure variable has a negative impact.

3.4 Fixed Effects Model (FEM):

Table N° (04): Fixed Effects Model (FEM)

VAR	(FEM) GDP	(FEM) GDP	(FEM) GDP	(FEM) GDP	(FEM) GDP	(FEM) GDP
EXPC	-0.042*** (0.118)	-0.4387*** (0.119)	-0.404*** (0.119)	-0.429*** (0.120)	-0.440*** (0.118)	-0.464*** (0.121)
FDIgdP	0.446*** (0.126)	0.440*** (0.126)	0.416*** (0.126)	0.442*** (0.126)	0.433*** (0.126)	0.452*** (0.126)
MT	0.002 (0.0241)	0.0032 (0.0244)	0.0011 (0.0241)	0.002 (0.0243)	0.0057 (0.0244)	0.0001 (0.0244)
INF	0.0458 (0.0308)	0.0464 (0.0313)	0.046 (0.0308)	0.0482 (0.0312)	0.0428 (0.0313)	0.0388 (0.0318)
CC	0.06850 (0.04549)					
GE		-0.00161 (0.0445)				
PSAV			0.0491 (0.0300)			
RQ				0.0173 (0.0401)		
RL					-0.0458 (0.0560)	
VA						0.0393 (0.0377)
Constant	5.5655 (4.0009)	9.727** (3.960)	7.175** (3.309)	8.597** (3.814)	12.068*** (4.200)	9.474*** (2.964)
F (5,188)	11.61***	11.02***	11.71***	11.07***	11.19***	11.30***
Obs	203	203	203	203	203	203
R-S (within)	0.23	0.22	0.237	0.227	0.229	0.231
N of ind	10	10	10	10	10	10

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Prepared by the researchers based on STATA 17.0 output.

From Table N° (04), we observe that all six models are significant, meaning they are statistically acceptable. Fisher's values for the six models are (11.61, 11.02, 11.71, 11.07, 11.19, 11.30) respectively, with a significant level less than 1%. The R-squared (within-group) values are: (0.231, 0.229, 0.227, 0.237, 0.22, 0.23). As for the model parameters, we found that all explanatory variables, including the six good governance indicators, are not significant, except for two unique explanatory variables:

1. Government consumption expenditure, which negatively affects economic growth.
2. Net foreign direct investment flows, which positively affects economic growth.

3.5 Poolability test Between (PRM & FEM):

In this test, we choose between the Pooled Regression Model and the Fixed Effects Model to determine which of the two models is better, using the Wald test under the following two hypotheses: H_0 : PRM is better if $F > 0.05$

H_1 : FEM is better if $F < 0.05$

Table N° (05): Wald Test

Model N°.	F-value	F-significance	Better Panel Model
01	2.78	0.0044	FEM
02	3.67	0.0003	FEM
03	2.78	0.0045	FEM
04	3.73	0.0002	FEM
05	3.89	0.0002	FEM
06	4.87	0.0000	FEM

Source: Prepared by the researchers based on STATA 17.0 output.

Since the test is significant ($F < 0.05$), we reject the null hypothesis and accept the alternative hypothesis, which states that the Fixed Effects Models are better than the Pooled Regression Models.

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

3.6 Random Effects Model (REM):

Table N°(06): Random Effects Model (REM)

VAR	(REM) GDP	(REM) GDP	(REM) GDP	(REM) GDP	(REM) GDP	(REM) GDP
EXPc	-0.226*** (0.0690)	-0.173*** (0.0662)	-0.271*** (0.0887)	-0.254*** (0.0841)	-0.266*** (0.0865)	-0.339*** (0.1007)
FDIgdP	0.442*** (0.1192)	0.395*** (0.120)	0.443*** (0.121)	0.429*** (0.122)	0.439*** (0.123)	0.455*** (0.124)
MT	-0.046*** (0.0144)	-0.0383*** (0.0146)	-0.0254 (0.0162)	-0.0227*** (0.0161)	-0.0169 (0.0161)	-0.0070 (0.0177)
INF	0.075*** (0.0289)	0.089*** (0.0297)	0.066** (0.0292)	0.0756** (0.0296)	0.0736** (0.0297)	0.0578* (0.0303)
CC	0.0925*** (0.0234)					
GE		0.0784*** (0.0270)				
PSAV			0.0512*** (0.0186)			
RQ				0.0432* (0.0252)		
RL					0.0374 (0.0319)	
VA						0.0234 (0.0339)
Constant	4.497*** (1.677)	3.774** (1.754)	6.681*** (2.172)	6.069*** (2.108)	6.040*** (2.322)	8.147*** (2.493)
Wald chi2	58.54***	48.27***	56.97***	48.97***	47.70***	51.72***
Obs	203	203	203	203	203	203
R-S (within)	0.19	0.17	0.226	0.212	0.208	0.226
N of ind	10	10	10	10	10	10

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Prepared by the researchers based on STATA 17.0 output.

From Table N° (06), we observe that all six models are significant, meaning they are statistically acceptable. The Wald chi2 values for the six models are (58.54, 48.27, 56.97, 48.97, 47.70, 51.72) respectively, with a significance level less than 1%. The R-squared

(within-group) values are: (0.226, 0.208, 0.212, 0.226, 0.17, 0.19). As for the model parameters, we found the following results:

Model 1:

$$GDP_{it} = a + \beta_1 CC_{it} + \beta_2 EXP_{it} + \beta_3 FDI_{it} + \beta_4 MT_{it} + \beta_5 INF_{it} + e_{it}$$

All explanatory variables are significant. The control of corruption index has a coefficient value of 0.0784 and a significance level of 0.0000, indicating a positive impact of this index on economic growth. We also found a positive impact on net foreign direct investment flows and inflation (0.442, 0.089) with a significant level of less than 1%. There was a negative impact on government consumption expenditure and trade (-0.226, -0.046) with a significant level less than 1% as well.

Model 2:

$$GDP_{it} = a + \beta_1 GE_{it} + \beta_2 EXP_{it} + \beta_3 FDI_{it} + \beta_4 MT_{it} + \beta_5 INF_{it} + e_{it}$$

All explanatory variables are significant. The government effectiveness index has a coefficient value of 0.092552 and a significant level of 0.0000, indicating a positive impact of this index on economic growth. We also found a positive impact on net foreign direct investment flows and inflation (0.395, 0.075) with a significant level less than 1%. There was a negative impact on government consumption expenditure and trade (-0.173, -0.0383) with a significant level less than 1% as well.

Model 3:

$$GDP_{it} = a + \beta_1 PSAV_{it} + \beta_2 EXP_{it} + \beta_3 FDI_{it} + \beta_4 MT_{it} + \beta_5 INF_{it} + e_{it}$$

All explanatory variables are significant. The political stability index has a coefficient value of (0.0512) and a significant level less than 1% (0.006), indicating a positive impact of this index on economic growth. We also found a positive impact on net foreign direct investment flows and inflation (0.443, 0.066) with a significant level less than 1%. There was a negative impact for government consumption expenditure and trade (-0.271, -0.0254) with a significant level less than 1% as well.

Model 4:

$$GDP_{it} = a + \beta_1 RQ_{it} + \beta_2 EXP_{it} + \beta_3 FDI_{it} + \beta_4 MT_{it} + \beta_5 INF_{it} + e_{it}$$

The regulatory quality index is significant at 10% with a coefficient value of (0.0432), indicating a weak positive impact of this index on economic growth. We also found a positive impact on net foreign direct investment flows (0.429) with a significant level less than 1%, and inflation (0.0756) with a significant level less than 5%. There was a negative impact on government consumption expenditure and trade (-0.254, -0.0227) with a significant level less than 1% as well.

Model 5:

$$GDP_{it} = a + \beta_1 RL_{it} + \beta_2 EXP_{it} + \beta_3 FDI_{it} + \beta_4 MT_{it} + \beta_5 INF_{it} + e_{it}$$

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

The rule of law index is not significant, in addition to the trade variable. There is a positive impact on net foreign direct investment flows (0.439) with a significance level less than 1%, and inflation (0.0736) with a significance level less than 5%. One variable has a negative impact: government consumption expenditure (-0.266) with a significance level less than 1%.

Model 6:

$$GDP_{it} = \alpha + \beta_1 VA_{it} + \beta_2 EXPC_{it} + \beta_3 FDIgdp_{it} + \beta_4 MT_{it} + \beta_5 INF + e_{it}$$

The voice and accountability index is not significant, in addition to the trade variable. There is a positive impact for net foreign direct investment flows (0.455) with a significance level less than 1%, and inflation (0.0578) with a significance level less than 10%. One variable has a negative impact: government consumption expenditure (-0.339) with a significance level less than 1%.

3.7 Poolability test Between (PRM & REM):

In this test, we choose between the Pooled Regression Model and the Random Effects Model to determine which of the two models is better, using the "Breusch and Pagan" test. The hypotheses for the model are as follows: H_0 : PRM is better if $\text{Prob}(\text{chibar2}) > 0.05$ H_1 : REM is better if $\text{Prob}(\text{chibar2}) < 0.05$

Table N° (07): chibar2 Test

Model N°.	chibar2 value	chibar2 significance	Better Panel Model
01	0.81	0.1836	PRM
02	0.0000	1.0000	PRM
03	2.82	0.0464	REM
04	8.88	0.0014	REM
05	7.47	0.0031	REM
06	25.71	0.0000	REM

Source: Prepared by the researchers based on STATA 17.0 output.

Since the test ($\text{chibar2} > 0.05$) is not significant in models one and two, we accept the null hypothesis which states that the Pooled Regression Model is better than the Random Effects Model. However, in the remaining four models, the test ($\text{chibar2} < 0.05$) is significant, so we reject the null hypothesis and accept the alternative hypothesis which states that the Random Effects Model is better than the Pooled Regression Model.

3.8 Poolability test Between (REM & FEM):

In this test, we choose between the Random Effects Model and the Fixed Effects Model to determine which of the two models is better, using the "Hausman" test. The hypotheses for the model are as follows: H_0 : REM is better if $\text{Prob}(\text{chi2}) > 0.05$

H_1 : FEM is better if $\text{Prob}(\text{chi2}) < 0.05$

Table N° (08): chi2 Test

Model N°	chi2 value	chi2 significance	Better Panel Model
01	18.36	0.0025	FEM
02	47.20	0.0000	FEM
03	8.17	0.1470	REM
04	24.18	0.0002	FEM
05	20.80	0.0009	FEM
06	6.54	0.2573	REM

Source: Prepared by the researchers based on STATA 17.0 output.

- Since the test ($\text{chi2} > 0.05$) is not significant in models three and six (3, 6), we accept the null hypothesis which states that the Random Effects Model is better than the Fixed Effects Model.
- Since the test ($\text{chi2} < 0.05$) is significant in models: 1, 2, 4, 5, we reject the null hypothesis and accept the alternative hypothesis which states that the Fixed Effects Model is better than the Random Effects Model.

3.9 Heteroskedasticity Test:

Table N° (09): Heteroskedasticity Test

Model N°	Wald chi2 value	Wald chi2 significance	Heteroskedasticity problem
01	118.90	0.0000	Present
02	131.76	0.0000	Present
03	141.07	0.0000	Present
04	118.51	0.0000	Present
05	131.94	0.0000	Present
06	119.30	0.0000	Present

Source: Prepared by the researchers based on STATA 17.0 output.

From the significant values of the test, we observe that all tests are significant, and therefore, there is a problem of heteroskedasticity in the data under study.

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

3.10 Autocorrelation Test: Wooldridge test

Table (10): Autocorrelation Test

Model N°	F value	F significance	Autocorrelation problem
01	0.707	0.4223	not present
02	0.823	0.3880	not present
03	0.846	0.3816	not present
04	0.767	0.4038	not present
05	0.818	0.3893	not present
06	0.753	0.4082	not present

Source: Prepared by the researchers based on STATA 17.0 output.

From the previous table, we observe that the test is not significant in all six models. Therefore, we conclude that the study models do not suffer from the problem of autocorrelation.

3.11 Estimation of the Study Model:

Based on the previous tests and the results obtained, we found: The Fixed Effects Model is the best model for estimation in models 1, 2, 4, and 5 of the study, and they suffer from the problem of heteroskedasticity. Therefore, we will use the Robust method to correct the models:

Table N° (11): Robust Fixed Effects Model

VAR	Robust (FEM) GDP	Robust (FEM) GDP	Robust (FEM) GDP	Robust (FEM) GDP	Robust (REM) GDP	Robust (REM) GDP
EXPc	-0.424 (-2.28**)	-0.438 (-2.30**)	-0.429 (-2.06*)	-0.440 (-2.54**)	-0.271 (-2.12**)	-0.339 (-2.39**)
FDIgdP	0.446 (1.66)	0.440 (1.65)	0.442 (1.66)	0.433 (1.72)	0.433 (1.79*)	0.455 (1.72*)
MT	0.0025 (0.09)	0.003 (0.12)	0.002 (0.09)	0.005 (0.21)	-0.025 (-1.49)	-0.007 (-0.33)
INF	0.045 (0.97)	0.046 (0.90)	0.048 (0.93)	0.042 (0.80)	0.066 (1.53)	0.057 (1.30)
CC	0.068 (1.21)					
GE		-0.001 (-0.03)				
RQ			0.017			

VAR	Robust (FEM) GDP	Robust (FEM) GDP	Robust (FEM) GDP	Robust (FEM) GDP	Robust (REM) GDP	Robust (REM) GDP
			(0.23)			
RL				-0.045 (-0.48)		
PSAV					0.051 (2.66***)	
VA						0.023 (0.42)
Constant	5.565 (1.00)	9.72 (1.80)	8.59 (1.39)	12.06 (1.81*)	6.681 (2.76***)	8.14 (2.94***)
F (5,188)	8.48***	13.71***	13.08***	17.37***	Chi2=75.07 ***	Chi2=46.0 ***
R-S (within)	0.23	0.22	0.22	0.22	0.22	0.22
N of ind	10	10	10	10	10	10

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Prepared by the researchers based on STATA 17.0 output.

From Table N° (11), which represents the Fixed and Random Effects models corrected by the Robust method:

▪ **Robust Fixed Effects Models:**

In the first column, representing Model 1, the government consumption expenditure variable appeared significant at p<0.05, while the remaining variables were not significant. Its formula was as follows: $GDP = -0.424EXPc + e_{it}$

In the second column, representing Model 2, the government consumption expenditure variable appeared significant at p<0.05, while the remaining variables were not significant. Its formula was as follows: $GDP = -0.438EXPc + e_{it}$

In the third column, representing Model 4, the government consumption expenditure variable appeared significant at p<0.10, while the remaining variables were not significant. Its formula was as follows: $GDP = -0.429EXPc + e_{it}$

In the fourth column, representing Model 5, the government consumption expenditure variable appeared significant at p<0.05, and the constant was significant at p<0.10, while the remaining variables were not significant. Its formula was as follows: $GDP = 12.06 - 0.440EXPc + e_{it}$

▪ **Robust Random Effects Models:**

In the fifth column, representing Model 3, the variables political stability, government spending, and net foreign direct investment flows were significant, as was the constant, at

The impact of governance and public spending on economic growth in MENA countries: an empirical study using panel data during the period 2002-2022

($p < 0.05$, $p < 0.10$, $p < 0.01$, $p < 0.01$) respectively. The variables inflation and trade were not significant. Its formula was as follows: $GDP = 6.681197 + 0.0512668PSAV - 0.2715666EXPC + 0.433FDIgdP + e_{it}$

In the sixth column, representing Model 6, the variables government spending and net foreign direct investment flows were significant, as was the constant, at ($p < 0.05$, $p < 0.10$, $p < 0.01$) respectively. The variables inflation and trade were not significant. Its formula was as follows: $GDP = 8.147086 - 0.3393596EXPC + e_{it}$

4. Conclusion:

This research was divided into theoretical and applied frameworks. The theoretical part included some previous studies on the topic, which addressed the relationship between economic growth and public spending on one hand, and the impact of governance on economic growth rates on the other, in the context of a scarcity of studies highlighting the impact of both governance and public spending on economic growth. This was followed by an analysis of the evolution of GDP in the sample countries, which are MENA countries. It showed a relationship between the increase in economic growth rates and the stability of security and political conditions on one hand, and rising oil prices on the other. It also became clear that the health status of countries is related to their national security, the best evidence being the decline in economic growth rates during the COVID-19 pandemic in 2020. As for the applied part, through the study conducted on MENA countries from 2002 to 2022, and through its six study models, it concluded a positive and significant impact of foreign direct investment and political stability, which is considered one of the main indicators of governance, and a negative impact for government spending directed towards consumption on economic growth in these countries.

5. Recommendations:

Based on the results obtained, we concluded that the governance system and political stability are very important for achieving high growth rates. Additionally, it is necessary to rationalize expenditures, especially those related to consumption, and to support and remove obstacles to investment to achieve sustainable development.

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