ANALYSING THE NEXUS BETWEEN ECONOMIC GROWTH, INSTITUTIONAL DYNAMICS AND ENVIRONMENTAL SUSTAINABILITY IN THE MENA REGION POST-COVID-19

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Abstract

The objective of this article is to theoretically shed light on the relationship between the quality of the environment, the institutional reality of corruption, and economic growth in the first instance. Secondly, we attempt to empirically study the direct and indirect effects of the institutional reality and environmental quality on economic growth in the MENA region before and during COVID-19 while applying simultaneous equations during the period (2018-2022). Among the main results found, the pandemic underscored the need for sustainable development and resilient environmental policies in the region.

Keywords: *Environment Quality, Institutional Reality, Economic Growth. COVID-19, Model simultaneous equations.*

INTRODUCTION

The analysis of the effects of institutions on the quality of the environment is of major interest due to the importance of the environment. Indeed, the statistics indicate institutional failings that could not only slow growth and income levels in these economies but also degrade their environment.

The institutional reality of very high corruption in Africa coincides with poor performance in terms of sustainable development. The weakness of their governance and economic backwardness can be explained, according to Kaufmann, Kraay, and Mastruzzi (2005), by the institutional quality that fights against corruption. The latter denotes a problem of essential allocation of resources to individual well-being.

For some economists, the institutional reality of corruption is a phenomenon that exists in the majority of countries with resource allocations that are the products of bad governance and bad institutions. In an environment marked by poor institutional quality, polluters or natural resource operators can organize themselves into lobbies to offer bribes to the authorities responsible for environmental regulation, describing the institutional reality of corruption, in exchange for the adoption of lax environmental regulations.

Even more, polluters or natural resource operators can act in a decentralized way by offering bribes to civil servants responsible for controlling the levels of pollution emitted or the quantities of resources withdrawn, in exchange for underreporting the estimation of their polluting emissions or their extraction of natural resources. As for Lopez and Mitra (2000), the adoption of lax environmental regulations concerning logging also leads to overexploitation of forest resources and they have highlighted the existence of a negative monotonous relationship between corruption and the rigor of environmental regulations.

Similarly, when civil servants responsible for the implementation of environmental regulations accept bribes, this leads to the complete dilution of the sanctions for non-compliance with these regulations according to Damnai (2002), which leaves the field open for polluters to further intensify their activities and thus accentuate environmental degradation, despite the adoption of environmental regulations.

In addition, Biswas and al. (2011) showed that corruption also degrades the environment through the informal sector by allowing polluting firms to escape environmental regulations, describing the institutional reality of corruption. Production in the informal economy is likely to increase pollution levels and lead to environmental degradation.

In light of the environmental Kuznets curve (EKC) hypothesis, the pressure that a nation exerts on the natural environment will eventually decrease when a high level of development is reached. The indirect effect would, therefore, be ambiguous. While authors such as Welsch (2004) and Lopez and Mitra (2000) consider that corruption contributes to accentuating the negative effect of growth on the quality of the

environment Using data on the Environmental Sustainability Index (ESI) as an indicator of the implementation of environmental regulations, Pellegrini and Gerlagh (2006) also highlighted the negative influence of corruption on the implementation of environmental regulations on a sample of 62 countries. The main objective of our study is to analyze the effects of corruption as an institutional reality on the quality of the environment and the relationship between corruption and environmental degradation. This work will emphasize the importance of the institutional reality in developing and improving the entrepreneurial concept while participating in the creation of wealth and GDP growth for our study region, MENA. In this sense, we will develop a review of the recent literature on the one hand, and on the other hand, we will approach a methodology based on the use of a model with simultaneous equations in the MENA region during COVID-19, applying simultaneous equations during the periods (2018-2022) with interpretations and conclusions.

1. LITERATURE PAPER

1.1. The Institutional Reality in the Environmental Context

The debate on the relationship between institutional reality and the environment, particularly regarding corruption, has broadened over time, encompassing institutional quality.

Many economists have analyzed this relationship, highlighting its variations over time and across different countries. The research results hold significant implications for policymakers dealing with the institutional reality of corruption, providing them with a tool to make decisions concerning the future adjustment of corruption policies during periods of environmental quality deterioration.

Several researchers, such as Balsalobre-Lorente and al. (2019), Sekrafi and Sghaier (2016), Rehman and al. (2012), and Sahli and Rejeb (2015), have demonstrated that corruption, describing an institutional reality of corruption, is a key factor contributing to environmental degradation. They have established that corruption reduces CO2 emissions when the state protects the environment. Previous empirical studies have revealed a link between political institutions and polluting emissions.

According to Ridzuan and al. (2019), the highest level of corruption has resulted in significant environmental pollution. Cole (2017) illustrated that corruption limits economic growth, having a negative impact on CO2 and S2O emissions per capita in less wealthy countries. Rehman and al. (2012) demonstrated that corruption significantly and negatively influences CO2 emissions in South Asian countries. They asserted that lower levels of corruption correlate with more stringent and effectively enforced environmental policies. According to this study, the institutional reality of corruption leads to unsatisfactory environmental governance and weakens environmental regulations.

1.2. The environmental Kuznets curve (CEK)

The literature review by Crossman (1991) and Krueger (1995) on the determinants of environmental quality is based on the theoretical hypothesis of the Environmental Kuznets Curve (CEK). This hypothesis postulates an inverted "U" relationship between economic growth and environmental degradation.

The curve suggests that environmental quality deteriorates during the initial phases of economic growth but improves beyond a certain income level (turning point) and an increase in per capita income. This empirical relationship, resembling the relationship between per capita income and income inequality observed by Simon Kuznets in 1955, is termed the "Environmental Kuznets Curve." The curve's shape implies a non-linear relationship between economic growth and long-term environmental quality. Despite clear theoretical predictions, empirical literature on the CEK yields varied results.

Some authors, such as Kais and Mbarek (2017) and Uddin and al. (2017), have detected the CEK in their work. Conversely, others have identified a monotonous, increasing relationship between economic growth and various pollutants, indicating a lack of decoupling between economic growth and environmental quality. Another category discerns more complex relationships between economic growth and the environment. According to Boyce et al. (1998), this relationship could be explained by technological aging, where reduced yields lead to increased pollution. Bruyn and al. (1998) attribute such a relationship to "technological cycles," stating that innovation improves environmental efficiency up to a threshold, beyond which progress opportunities are exhausted.

However, Dasgupta et al. (2002) highlight in their study on the United States that certain pollutant emissions can decrease even as the overall environment does not improve due to the emergence of other pollutants. Meunié (2004) observes that this curve is validated primarily for localized, urban pollution, unlike cross-border pollution (CO2, N2O, and CH4) and suspended particles, which do not experience any inflection.

Concerning trade openness, Shafik and Bandyopadhyay (1992), Birdsall and Wheeler (1993), Porter and van der Linde (1995), Gutierez de Pineres and Ferrantino (1997), and Frankel and Romer (1999) estimate

that trade openness can mitigate environmental degradation through technology transfer, while Baumol and Oates (1988) and Levinson and Taylor (2008) observe that international trade increases pressure on the environment. Thus, determinants linked to governance and the quality of institutions, as shown by various studies, reveal that citizens in democratic countries are better informed about ecological issues, enabling them to express their environmental needs through freedom of speech and freedom of the press (Payne, 1995; Deacon, 2009).

Panayotou (1997) found that a 10% improvement in the quality of institutions (measured by honoring commitments to voters, government effectiveness, and control of corruption as quality indicators) reduces sulfur dioxide (SO2) emissions by 15%. In a similar vein, Desai (1998), in a study on ten developing countries, found that institutional quality, particularly in the case of corruption, is a significant source of environmental degradation.

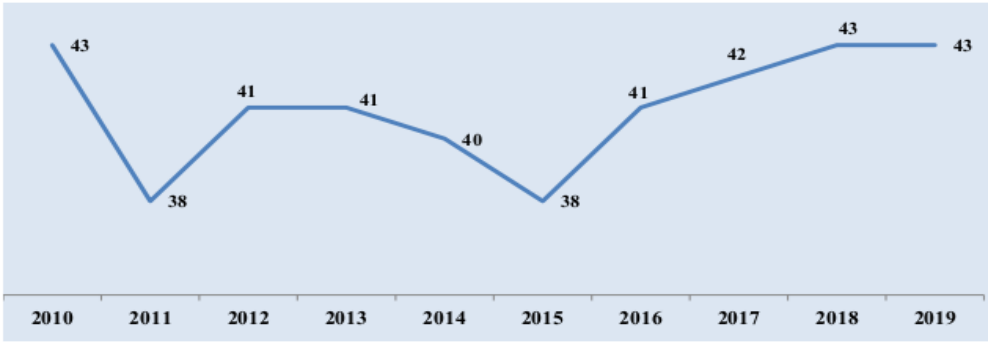
Osabuohien and al. (2014) analyzed the CEK for a panel of 50 African countries grouped into oil-producing and non-oil-producing countries over the period 1995-2010. They included variables such as the average values of the rule of laws, the quality of regulation, and the effectiveness of governance in their analysis. In the sample of oil-producing countries, institutions had a positive impact on CO2 emissions but an opposite effect on non-producing countries. As evident, the link between the quality of institutions and the quality of the environment is not always virtuous (Fredriksson and Svensson, 2003). They show that democracy alone cannot lead to an improvement in environmental quality since investors make production and resource utilization choices based solely on their private interests.

1.3. The institutional reality of corruption and environmental quality: Empirical study

The institutional reality of corruption like corruption is a major problem in Tunisia; it wastes public resources and causes economic and social inequalities. The corruption, as a scourge beyond any the institutional reality of corruption when the updating of legal texts, has increased significantly in recent years.

The following graph illustrates the evolution of corruption from 2010 to 2019. It increased rapidly with great speed from 2015 to 2019.

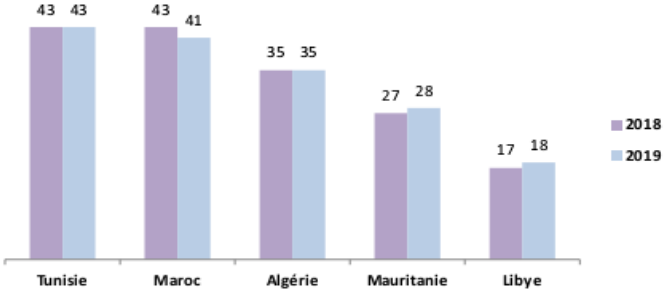
Figure 1: Evolution of the institutional reality of corruption score in Tunisia (2010 – 2019)[1]



***Source**: Corruption Perceptions Index 2019*

Moreover, the following graph illustrates corruption in the Greater Maghreb in 2018 and 2019.

Figure 2: Evolution of corruption in the Greater Maghreb in 2018 and 2019.



Source: Corruption Perceptions Index 2019

[1] Corruption Perceptions Index 2019

Thus, Tunisia has the highest level of corruption in the greater Maghreb. The areas most exposed to corruption in 2019 are public administration (89.3%), the health sector (88.6%), political parties (87.8%), the security sector (87.4%), customs (87.3%), as well as all other sectors (more than 70%).

a. Presentation of data

In numerous studies concerning our problem, the term corruption is generally not clearly defined. We then selected two variables in relation to their importance to explain the link between corruption and environmental degradation.

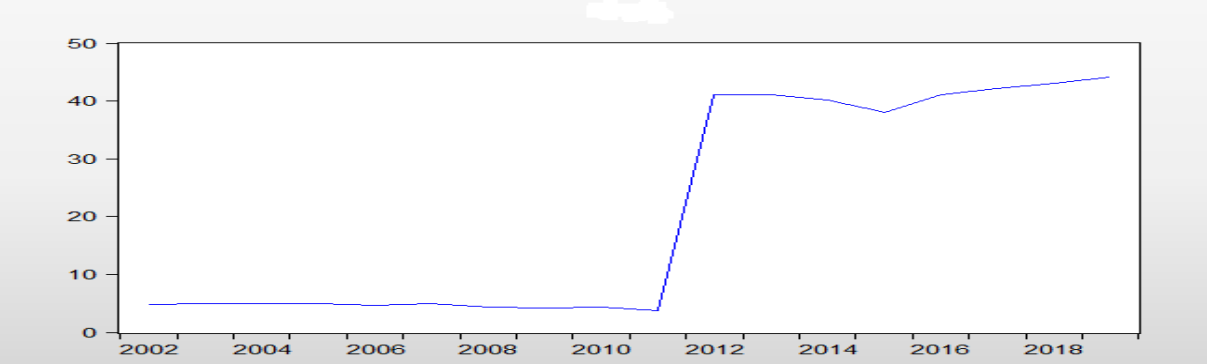
The variable that is used to describe corruption is measured by the Corruption Perception Index By definition, there are no published and exhaustive data on corruption, Transparency International[2] therefore relies on a corpus of indicators and data, coming in particular from the African Development Bank3, Freedom House, or even the World Bank[4]. A score closer to zero corresponds to more corruption, a score closer to 100 to less corruption.

This variable is used by Seka, (2005)[5]; Mtiraoui, A. (2021)[6], Cole (2007) and Welsch, (2004). With regard to CO2 emissions "*Carbon dioxide or carbon dioxide (CO2)*". It is a colorless, odorless and non-toxic gas. Emissions means the release of greenhouse gases or precursors of such gases into the atmosphere above an area and over a given period. One metric ton equals 1000 kilograms

Our data are annual and cover a long period from 2002 to 20019. They were respectively extracted from the CD-ROM of the World Bank. These data are processed by the Eviews software.

b. Graphic Review

Figure 3: The evolution of the institutional reality of corruption in Tunisia between 2002 and 2019.



Source: *Corruption Perceptions Index in Tunisia*[7]

The figure 3 above shows the evolution of the institutional reality of corruption from 2002 to 2019. We note that corruption is almost constant between 2002 and 2008, decreases between 2008 and 2010, and then increases sharply after 2011 due to the unstable economic and political situation. There is an increase from 2011 to the present day; this period was marked by the fall of the presidential power in place and a revolution pushing Tunisians to enrol in a new process of democratic transition. Until 2010, the World Bank and the IMF considered Tunisia.

[2] Transparency International is a global movement working in over 100 countries to end the injustice of corruption.

[3] The African Development Bank Group (ADB) is a multilateral development finance institution headquartered in Abidjan, Ivory Coast.

[4] The World Bank Group is one of the world's largest sources of funding and knowledge for developing countries. Its five institutions share a commitment to reducing poverty, increasing shared prosperity, and promoting sustainable development.

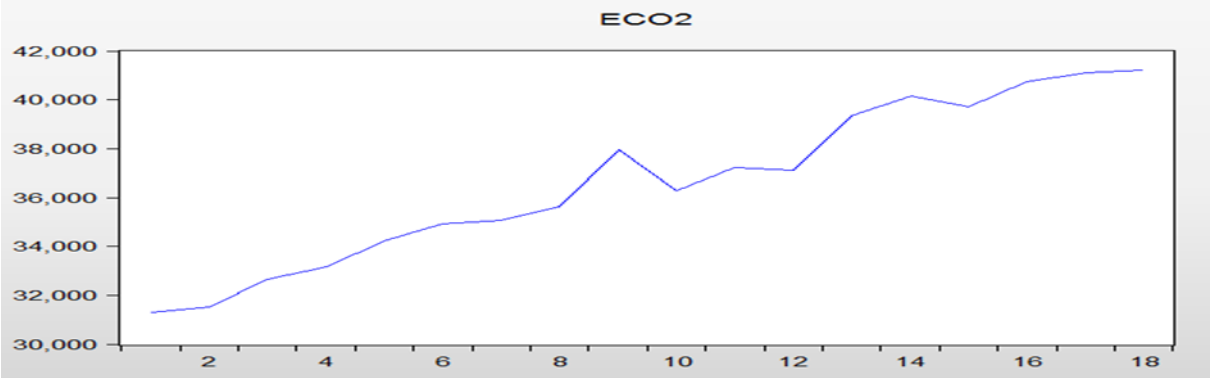
[5] Seka (2005):''Corruption and Human Capital: What Link?'' has already been presented at the tenth anniversary of PTCI, April 11 – 12, 2005 in Quagadougou, Burkina Faso. The criticisms and comments during this first presentation have improved the present version. We thank all the speakers, including Prof. M.Kasse. The author remains solely responsible for the content of this paper.

[6] Mtiraoui, A.; (2015): ''Control of corruption, Action of public power, Human capital and Economic development: Application two sectors of education and health in the MENA region. https://mpra.ub.uni-muenchen.de/65004/.''

7Corruption Perceptions Index in Tunisia

In conclusion, it can be said that economic and political instability contributes to the increase in the institutional reality of corruption, which in turn has an effect of degrading the environment in Tunisia.

Figure 4: Evolution of CO2 emissions in Tunisia from 2002 to 2019



***Source**: Corruption Perceptions Index in Tunisia*

2. WORK METHODOLOGY

Sample and COVID-19 Period

Our sample of countries is made up of 17 MENA countries, namely: 6 African countries, 9 Gulf countries and 01 Mediterranean country. In fact, this study region is made up of 17 countries, namely: United Arab Emirates, Qatar, Saudi Arabia, Tunisia, Turkey, Morocco, Egypt, Iran, Iraq, Algeria, Jordan, Bahrain, Yemen, Oman, Libya, Sudan, Israel.

All these data have an annual frequency of publication and cover during the COVID-19 period (2018-2022).

2.1. Assumptions

***H_1**: The pandemic indicator is calculated by the following formula: (Number of attacks) / 10. This indicator describes the number of attacks for a country over the study period.*

***H_2**: The articulation between Institutional Reality (IQG) and the environment quality (ENV) in a context of pandemic is supposedly defavorable for MENA countries.*

***H_3**: Let's assume that the environment quality (ENV) is a catalyst for the MENA region.*

***H_4**: Institutional Reality (IQG) in the context of a pandemic (PAN) is a mediator (intermediary) between the environment quality (ENV) and economic growth (GDP).*

2.2. Presentation of data

The data used in this study are from secondary sources. They have been extracted from the World Development Indicator (WDI, 2017) and the Worldwide Government Indicator (WGI, 2015). The variables are GDP per capita, the degree of trade openness, population the quality of institutions.The many governance indicators of Kaufmann et al. (2007) represent these namely: government effectiveness (EG), regulatory quality (RQ), control of corruption (CC). The Kaufmann and al, and (2010) contribution constructs these indicators through surveys of households, businesses, non-governmental organizations and public sector organizations. These six indicators vary from -2.5 "poor governance" to 2.5 "perfect governance". The quality of the environment, which represents the variable to be explained in this study, is captured in turn by the level of carbon dioxide emissions per inhabitant (CO2) measured in "kilo/tonne"; methane (CH4) and nitrous oxide (N2O) measured in CO2 equivalent. They are the main greenhouse gases.

They have been used in the literature to capture environmental degradation in Grossman and Krueger, 1995; Panayotou, 1997; Boyce et al., 1998; Akpan et al., 2012; Cho et al., 2014).

The indicators used in our econometric contribution are:

* GDP: This is the annual growth rate of GDP per capita. (WB)
*HK: This is the tertiary education rate. (WB)
*INV: This is the gross fixed capital formation in relation to GDP. (WB)
*ENV: This is the environmental indicator captured in turn by CO2. (ESI)
*FDI: This is the net flow of foreign direct investment. (WB)
*TRADE: It is the sum of exports and imports in relation to GDP. (WB)
*IQG: It is the institutional reality of the synthetic governance of six indicators. (WGI)
*POP: This is the annual population rate of GDP. (WB)

3. 4. Model Specification: Simultaneous Equations Model

In order to answer our basic problem which shows the direct and indirect effects of the institutional reality (IQG) and the environment quality (ENV) on economic growth (GDP) in MENA region before and during COVID-19 while applying the simultaneous equations during the period: (2018-2022). The significant share of polluting emissions comes from many informal activities according to Biswas and al. (2011).

***The Institutional Equation*:** $$IQG_{i,t} = \alpha_0 + \alpha_1 GDP_{i,t} + \alpha_2 ENV_{i,t} + \sum_{i=3}^{3} \alpha_i P_{i,t} + \varepsilon_{i,t} \quad \textbf{(A)}$$

The environment quality Equation: $$ENV_{i,t} = \beta_0 + \beta_1 GDP_{i,t} + \beta_2 IQG_{i,t} + \sum_{i=3}^{4} \beta_i V_{i,t} + \mu_{i,t} \quad \textbf{(B)}$$

***The Economic Growth Equation*:** $$GDP_{i,t} = \delta_0 + \delta_1 IQG_{i,t} + \delta_2 ENV_{i,t} + \sum_{i=3}^{4} \delta_i X_{i,t} + \omega_{i,t} \quad \textbf{(C)}$$

When (i = 1... 17; N = 68; t = 1…4). With; $X_{i,t} = INV_{i,t}$ and $HK_{i,t}$, $V_{i,t} = TRADE_{i,t}$; $P_{i,t} = FDI_{i,t}$

$IQG_{i,t}$ is the governance quality index which is a synthetic variable grouping the six governance indicators of Kaufman et al.

$\varepsilon_{i,t}$, $\mu_{i,t}$ and $\omega_{i,t}$ are the random variables of equations **A, B** and **C** respectively.

Method used: Simultaneous equations in panel data

- *Method used: Simultaneous equations in panel data*[8]

Empirical studies have examined very simple models limited to an equation, generally linear where there is an endogenous variable or one to be explained.

The estimation of the model equations,

- Endogeneity problem
- REG3 (Three-stage least-squares regression) methods.
-Restrictions exclusion

Our model, the variable "$GDP_{i,t}$" appears at the level of the third equation as an endogenous variable and, respectively, at the level of the second and the first equations as an exogenous variable.

Similarly, the variables "$ENV_{i,t}$ and " $IQG_{i,t}$" appear at the level of the last equation as exogenous variables and $ENV_{i,t}$ appears in the second equation as an endogenous variable and $IQG_{i,t}$ appears in the first equation as an endogenous variable.

➢ *Linear restrictions*

There are two identification conditions: order conditions (necessary conditions) and rank conditions (sufficient conditions).

➢ *Necessary conditions: Order conditions*

In our case, we note for the model to be studied, that all the equations are over-identified. Indeed, we have three endogenous variables in the model (W = 3) "IQG", "ENV" and "GDP" and four exogenous variables: "TRADE", "HK", "INV", "FDI".

-The first equation: Applying the identification conditions: W' = 1, K' = 4 and r = 0 with W ' is the number of endogenous variables appearing in an equation and K' is the number of exogenous variables appearing in an equation.

Let therefore be W – W'+ K – K' = 3 – 1 + 6– 4= 4> W – 1 = 3 – 1=2, the first equation is therefore over-identified.

-The second equation We therefore have: W = 3, K = 6, W' = 1, K' = 3 and r = 0, which gives us: W – W' + K – K' = 3 – 1 + 6 – 3 = 7> W – 1 = 2, so the second equation is over-identified

-The third equation: So we have W = 3, K = 6, W'=1, K'=3 and r=0,

which implies W-W'+ K- K'= 3 - 1+ 6– 3= 5> W – 1 = 2, the third equation is therefore over-identified. Since in our model all the equations are over-identified, the model will therefore be over-identified.

[8] Mtiraoui, A. and al. (2019): ''Islamic Financial Development between Policy Stability and Economic Growth in the MENA region: Estimate a Model of Simultaneous Equations''. *SSRN Electronic Journal*.

3. PRESENTATION AND DISCUSSION OF RESULTS

3.1. Descriptive Analysis:

The matrix of the relationship between institutional quality, the environment, and economic growth is a complex interplay that warrants thorough examination. Institutions, encompassing governance structures, regulatory frameworks, and anti-corruption measures, play a pivotal role in shaping the environmental landscape and influencing economic development.

Table (01): ***Correlation matrix between variables***

Variables	IQG	ENV	GDP
IQG	*1.000*		
ENV	*-0.357*	*1.000*	
GDP	*0.467*	*0.241*	*1.000*

Source*: Stata 15.1 output*

- *The correlation coefficient assumptions are:*

- The correlation coefficient r_{xy} is a unit less value between **-1** and **1**. The closer **r** is to zero, the weaker the linear relationship.
- Positive values of r_{xy} indicate a positive correlation when the values of both variables tend to increase together.
- Negative values of r_{xy} indicate a negative correlation when the values of one variable tend to increase and the values of the other variable decrease.

On the other side, the quality of the environment can feedback into institutional effectiveness. Environmental degradation often necessitates more robust regulatory frameworks and governance structures to address the challenges posed by pollution, resource depletion, and climate change. Consequently, institutions may evolve and adapt to mitigate environmental risks and promote sustainable practices.

Moreover, the economic growth trajectory is intricately linked to both institutional quality and environmental conditions. Sound institutions foster a conducive business environment, enhance investor confidence, and contribute to overall economic stability. Conversely, environmental degradation can pose risks to economic activities, affecting sectors such as agriculture, tourism, and public health, which, in turn, may necessitate institutional responses to manage these challenges.

3.2. Presentation of results

Table (02): Analysis of Simultaneous Equation Model Results

Variables	IQG	ENV	GDP
C	3.653	0.710	1.609
	(1.83)*	(1.75)*	(7.25)***
GDP	(1.027)**	(-2.368)***	----
	(2.04)	(-3.35)	
IQG	------	(−4.243)***	(5.312)*
		(−3.55)	(1.91)
ENV	(-1.492)* (-1.87)	---------	(2.842)*** (4.19)
TRADE	(-8.008)** (-2.08)	----------	--------
HK	-----	----------	−0.047
			(−1.31)
INV	----------	----------	(-0.247)*
			(-1.81)
FDI	----------	(-1.867)**	----------
		(1.99)	
Observations	68	68	68
Probability	0.0001	0.0002	0.0001
R^2	*0.2502*	*0.2646*	*0.3214*

Note: The terms in parentheses correspond to **t-Student** and ***, **, *: significant at a threshold of **1%, 5% and 10%** respectively.

Discussion des résultats

The objective of this study is to examine the direct and indirect effects of the institutional reality **(IQG)** on environmental quality **(ENV)** and economic growth **(GDP)** in the MENA region during COVID-19, utilizing simultaneous equation models.

The institutional reality of corruption (IQG) is considered an endogenous factor playing a crucial role in economic growth and influencing the relationship between environmental quality (ENV) and economic growth (GDP).

Our hypothesis is rooted in understanding how governance quality affects environmental quality in the study region. Firstly, concerning the direct effect of environmental quality (ENV) on the creation of gross domestic product (GDP), the results reveal a statistically significant positive direct effect **(2.142)** at **1%**, indicating that a **1%** increase in environmental quality leads to an almost 3 point increase in the growth rate of GDP. This finding aligns with prior literature, including the works of Pellegrin and Gerlach (2006) and Mtiraoui, A. and al. (2021).

Additionally, examining the direct effect of environmental quality (ENV) on economic growth (GDP), the indicator (IQG) shows a positive and significant relationship **(1.027)** at **5%**, implying that a **5%** increase in (IQG) results in a **1.027point**s increase in (GDP).

This suggests that the institutional reality in the MENA region plays a theoretically beneficial role by explaining government intervention, as supported by Panayotou (1997), who found that a **10%** improvement in the quality of institutions reduces sulfur dioxide (SO2) emissions by 15%.

However, the estimate indicates a negatively correlated (-1.492) and statistically significant (10%) effect of institutional reality (IQG) on environmental quality (ENV). Therefore, the institutional reality (IQG) exhibits an indirectly negative impact **(-4.243*2.842)** on economic growth (GDP) at a statistically significant level (**1%**).

Furthermore, a positive and statistically significant direct effect of environmental quality (ENV) on economic growth (GDP) is observed during the COVID-19 period.

According Grossman and Krueger, (1995), Panayotou,(1995); Shafik and al., (1992), it should be noted that the analysis of the determinants of environmental degradation has become a very fascinating subject in the economic literature and most of the work is devoted to verifying the hypothesis of the Environmental Kuznets Curve between economic growth and the environmental degradation.

Depending on the World Bank, (1992). The interest of the CEK is that it postulates the possibility for poor countries to improve environmental quality as they develop, as the standard of living of individuals improves and promotes the emergence of environmental awareness. Various authors have offered a detailed review of empirical work on the relationship between economic growth and environmental quality with Dinda, (2004); and Nourry, (2007).

The diversity of these works underscores that environmental challenges vary across regions, leading to unique solutions to mitigate environmental disasters. According to Sekrafi and al. (2016), there exists a negative and significant relationship between the control of corruption and economic growth, as well as a negative and significant relationship between the control of corruption and environmental quality (CO2), and energy consumption. The findings suggest that while controlling corruption contributes to economic growth, its positive impact may indirectly influence environmental quality.

Overall, our estimation method reveals that a majority of the member countries in our MENA region are striving for political stability amid global cyclical fluctuations to protect the environment through improved institutional quality. In conclusion, the relationship between economic growth, institutional realities, and environmental quality in the MENA region during the COVID-19 pandemic is intricate and diverse.

The pandemic has underscored the significance of effective governance, institutional resilience, and the necessity to strike a balance between economic priorities and environmental sustainability. The long-term outcomes will hinge on how governments in the region address these challenges and adapt their strategies in the post-pandemic.

4. CONCLUSION

To fight against environmental degradation, we have tried in this work to study the direct and indirect effects of the institutional reality during the period of the COVID-19 pandemic (2018-2022) on economic growth through environmental quality. Indeed, the literature review mentioned the role of institutional reality during COVID-19 stopped environmental degradation. First, we determined the nature of the relationship between two main indicators, namely the institutional reality and the environmental quality. Secondly, we tried to empirically study the effects between the institutional reality and the quality of the environment and through this link; we tested the impact of these two variables on economic growth.

Several researchers have shown that corruption degrades the environment and stimulates CO2 emissions Balsalobre-Lorente et al., (2019, Sekrafi and Sghaier, (2016), Rehman and al., (2012), Cole and Sahli and Rejeb, (2015). Other researchers have proven that corruption reduces CO2 emissions if the state protects the environment and reduces corruption (Cole, (2007). In addition, the study by Biswas et al. (2011) will also make it possible to assess the channel of the informal sector as a vector for transmitting the effects of corruption on the environment, as suggested by theoretical ideas.

To reduce the degradation of the environment and improve the quality of the environment, in this case the intervention and the presence of the State is mandatory in order to help and encourage citizens and large companies to reduce corruption and the preservation of the environment.To protect our

environment from types of dangers like corruption, an independent judiciary system for MENA countries must be enforced. This system deals with corrupt and opportunistic behavior, can significantly reduce levels of corruption.The economic growth and environmental quality relationship in the Middle East and North Africa (MENA) region during the COVID-19 pandemic has been complex and multifaceted. In conclusion, several key points can be highlighted:

- Economic Impact: The MENA region, like the rest of the world, experienced a significant economic downturn during the COVID-19 pandemic. Lockdowns, travel restrictions, and disruptions to global supply chains led to contractions in various sectors, particularly tourism, oil, and manufacturing.
- Environmental Impact: The pandemic had mixed effects on the environment in the MENA region. On one hand, reduced industrial activity and transportation during lockdowns led to temporary improvements in air quality and reduced carbon emissions. However, these improvements were often short-lived, and there were other negative environmental consequences, such as increased medical waste and a slowdown in renewable energy projects.
- Resource Dependence: Many countries in the MENA region are highly dependent on oil and gas exports for their revenue, which was severely impacted by the pandemic due to the drop in global oil demand and prices. This highlighted the vulnerability of these economies to external shocks and the urgent need to diversify their income sources.

In conclusion, the results regarding the interplay between economic growth, institutional reality, and environmental quality in the MENA region during COVID-19 are complex and context-specific. The pandemic exposed both vulnerabilities and opportunities for improvement in these areas, and the long-term impact will depend on how countries in the region adapt their policies and strategies in response to these challenges.

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[16] Transparency International is a global movement working in over 100 countries to end the injustice of corruption.

[17] The African Development Bank Group (ADB) is a multilateral development finance institution headquartered in Abidjan, Ivory Coast.

[18] The World Bank Group is one of the world's largest sources of funding and knowledge for developing countries