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An Analysis of Institutional and Macroeconomic Factors

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Advancing Economic Freedom Through Digital Government in the MENA Region: An Analysis of Institutional and Macroeconomic Factors.

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Abstract:
This study analyzes the impact of digital government on economic freedom in the MENA region, within a context of institutional and macroeconomic factors. It covers a panel dataset of 16 MENA countries over the period 1995-2023. It uses the fixed effect estimation model. The findings show a positive significant impact of digital government on economic freedom, highlighting the transformative spillover of digital governments on the conditionalities of a sound business environment. This is coupled with a non-linear positive impact of good governance practices, measured holistically, resembling diminishing returns after a certain threshold. The macroeconomic framework, represented by the Gross Domestic Product (GDP) growth, low inflation rates, and stable real exchange rates are also essential contributors to better economic freedom. The findings also show an unconventionally negative impact of FDI on economic freedom, signaling challenges related to inadequate institutional frameworks of weak absorptive capacity. This study showcases the need for reforms addressing structural disparities and the digital divide in the MENA region, providing policymakers with insights to improve the resilience of economic freedom in the area.

Keywords: *Economic Freedom, Economic Growth, MENA Region, Governance, e-Government, Institutions, Business Environment.*
JEL Classification: *H11, H83, O33, O43, F63, P48*

1. Introduction:

Based on the thought of Adam Smith and other scholars advocating liberty and property rights as fundamentals of economic growth, innovation, and attraction of foreign investments, the notion of economic freedom builds on personal choice, voluntary exchange, open markets, and protection of property rights. It is presumed to positively influence economic growth, social equity, and institutional development. In turn, the business environment requires the availability of contextual factors related to business-driven economic policies, financial markets, regulatory frameworks, governance systems, and relevant infrastructures. In parallel, the political economy and polity play a crucial role in the efficiency of intended outcomes. This research discusses the institutional factors influencing economic freedom, namely governance and e-government infrastructure, within the macro-economic context of 16 countries of the MENA region, during the period 1995-2023.

This paper is divided into six sections. Section (2) is the literature review. Section (3) is the methodology. Section (4) is the regression findings. Section (5) is a discussion of the findings. Section (6) is the conclusion.

2. <u>**Literature Review**</u>:

Economic freedom highly influences the business environment, as each of its elements acts as a precondition for having a conducive business setting. Business ideas and financing follow conducive environments that are modernized and equipped with facilities for optimal growth. In today's world, technology innovation, particularly digitization, has become inevitable particularly in reducing costs of transactions and operations and strengthening governance supervision, among others. This is particularly the case in developing countries that face many structural challenges; as better performance of the economic freedom index means lower barriers to market entry, better regulatory frameworks, stable monetary policy, and effective governance strategies, thus attracting foreign direct investments and opening for entrepreneurship promotion (Singh & Gal, 2020; Jiang, 2022). This ultimately facilitates inclusive economic growth and sustainable development. Within the same framework, advancing the digital government front through the integration of innovation and technology promotes productivity and efficiency, in turn strengthening the performance of the factors of economic freedom particularly in developing markets (Liu & Feng, 2022). The MENA region witnesses similar challenges to economic freedom (Al-Refai & Saad, 2023).

The importance of economic freedom is multidisciplinary and expands to various aspects of economic prosperity. First, economic freedom addresses structural deficiencies in developing economies. Simplifying business regulations, strengthening property rights, and minimizing constraints optimize the ease of doing business and strengthen the competitiveness of the domestic market, attracting FDI and other economic activities that contribute to GDP growth. Evidence from East Africa, Latin America, and South Asia supports this argument (Gizaw et al., 2023; Singh & Gal, 2020). Second, having a robust status of economic freedom stabilizes the economy and mitigates external shocks. It provides resilience to the economy facing uncertainty or cross-border economic and/or financial crises, by adopting effective fiscal and monetary policies (Rapsikevičius et al., 2021). Third, it secures the necessary market predictability and economic stability needed to attract and retain business activities and sustainable economic growth.

In turn, developing countries suffer from weak governance and institutional structures, which increase the cost of transactions and doing business. Empirical evidence from various regions in developing countries shows that good governance plays a pivotal role in providing conducive conditions for business activities, that is the business environment (Kongo, 2023; Bostan et al., 2021; Malik et al., 2022; Nguyen & Luong, 2021; Woolcock, 2017). Good governance, reflected in the quality of institutions is composed of six indicators specified by (Kaufmann et al., 2024) which are: Voice and Accountability, Political Stability and No Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. Good governance frameworks are critical factors contributing to strong economic freedom profiles in developing countries. Good governance, supported by the provision of necessary reforms, helps in reducing investor uncertainty and transaction costs, fostering conducive environments for innovation and optimized allocation of resources. This in turn supports the provision of inclusive economic growth and sustainable development.

The business environment in the MENA region is rich in diverse economic and institutional conditions that may attract or expel new investments and opportunities. Institutional robustness enhances the positive effects of human capital and access to quality physical and technological infrastructure. It also ensures good governance practices, particularly those related to accountability and transparency, which in turn optimizes the effectiveness of resource exploitation and reinforces economic outcomes (Ronaghi et al., 2020). In resource-deficient economies, empirical evidence shows a direct and positive relationship between good governance and economic growth, as it allows for efficient allocation of scarce resources towards growth-prone economic activities (Adegboyega & Arikewuyo, 2020).

Adopting robust institutional frameworks alleviates the risks associated with regulatory uncertainty and improves investor trust in the public administration, thus providing the stability an investor needs in a business environment. Evidence from China reveals the significant positive impact of robust institutional quality on improving the business foundations of local firms, allowing them to improve productivity and growth prospects (Dong & Zhang, 2022). As for the MENA region, governance-oriented reforms are analogous with better innovation outcomes fostering impactful economic activity that is critical to enhancing economic and developmental resilience (Barkhordari & Azimi, 2021; Zhong & Chen, 2023). For instance, during the COVID-19 crisis, MENA countries with a strong governance basis could mitigate the risk and stabilize economic activity better than those with a weak institutional framework (Almustafa et al., 2023).

Digitization of public administration operations and services – which is the concept of e-government - helps streamline processes and reduce incidents of corruption, consequently improving service delivery and decreasing economic costs (Mergel et al., 2019). It has a positive impact on institutional dimensions of economic governance. Countries boasting advanced digital government systems tend to harbour more efficient public administrations. These systems streamline bureaucratic processes, curtail costs, and ameliorate service delivery, thus facilitating the transformation of policies and strategies into actionable digitally-authorized public services. This allows public sector entities to improve their responsiveness to people's demands for government services by improving the administrative processes (Ubaldi & Okubo, 2020).

Empirical evidence shows that countries that incorporate government digitization, through the introduction of e-government services, enhance the delivery of public services and improve the efficiency of state administrations, by optimizing efficiency, transparency, and service delivery. Consequently, the introduction of government digitization will have profound implications for the improvement in GDP growth, lower transaction costs, established rule of law, less corruption, and an enabling environment for the private sector to flourish by streamlining processes (Kamal et al, 2023; Grigalashvili, 2023).

(Hani & Dutta, 2020) dissect the role of e-government initiatives across developing countries, unveiling a positive correlation between digitization and economic performance. Their study illuminates how digitized government services dismantle bureaucratic inefficiencies, streamline processes, and cultivate an environment conducive to business activities and foreign investments. Likewise, (Alawadhi & Morris, 2018) probe into the economic ramifications of digital government in the Middle East and North Africa (MENA) region, unearthing that nations with advanced e-government frameworks experience heightened GDP growth rates. This phenomenon is attributed to enhanced public sector performance and heightened public trust in government operations. Further corroborating these insights, (Zhang & Chen, 2019) conducted a comprehensive analysis of the digital transformation of public services in Asian countries. Their findings underscore the substantial economic benefits accrued from digitization, ranging from heightened government efficiency to reduced corruption, thereby catalysing investment attraction and stimulating economic activities. For instance, Tapscott (2019) accentuates the transformative potential of blockchain technology in public administration. By amplifying transparency and curtailing corruption opportunities, blockchain integration in government operations can wield a profound impact on economic growth and institutional trust. Embracing a global outlook, Kamal et al. (2023) underscore the tangible economic improvements witnessed in countries that implement e-government initiatives. Such endeavours render government services more accessible, thus contributing to positive shifts in various economic indicators, including GDP growth, by mitigating transaction costs.

The integration of digital technologies into government operations yields a transformative impact on the quality of state institutions, markedly enhancing their efficiency and transparency. Bertot et al. (2019) expound upon how e-government initiatives serve as potent antidotes to corruption by amplifying transparency and accountability in public sector transactions. These efforts not only foster public trust but also elevate the overall quality of governance. Furthermore, (Meijer, 2020) probes into the ramifications of digital government arrangements on public sector transparency in Latin America. The study discerns how digital platforms amplify citizens' access to information, thereby fortifying institutional accountability and governance quality.

Sub-Saharan Africa (Asongu & Nwachukwu, 2018) elucidates how e-government initiatives uplift institutional quality by curbing administrative corruption and elevating public sector efficiency. Their study underscores the indispensable nature of digital tools in fortifying transparent, accountable institutions. Drawing a nexus between government digitization and state institutions, Sipior et al. (2020) explain how digital government initiatives refine service delivery and public sector management in Southeast Asia. Their findings unveil how digital tools mitigate bureaucratic red tape, consequently bolstering the overall efficiency and responsiveness of public institutions. The transformative potential of government digitization permeates diverse regions, each showcasing unique advancements and challenges. In Sub-Saharan Africa, Lartey et al. (2018) underscore how digital public financial management systems fortify transparency and accountability, nurturing effective public debt management and economic growth.

The interplay between economic freedom and digital government provides wide opportunities to enhance the business environment of the MENA region. Empirical evidence showcases that digitizing government operations and services lowers barriers to market entry, promotes investment, reduces administrative inefficiencies, and increases market transparency; thus, enhancing economic freedom. Government digitization acts as a fast track to combat structural challenges, opening the economy for more business activities and less dependence on rentiers in the MENA region (Dhaoui, 2021; Zhong & Chen, 2023). The GCC countries provide an interesting example of how government digitization promoted a business environment that is conducive for small and medium enterprises, by lowering administrative and transaction costs and optimizing regulatory processes (Zhong & Chen, 2023). The interlinkage between government digitization and good governance systems is an essential combination to create high-quality institutional frameworks necessary to combat the drawbacks of concurring challenges related to corruption, lack of accountability and transparency, weak fiscal and monetary policy performance, political instability, and other barriers to economic freedom (Al-Refai & Saad, 2023; Liu et al., 2021).

On the other hand, it is important to realize the different levels of digital advancement and the different structural and systemic challenges in the MENA region. The findings of previous studies argue for the adoption of targeted reforms corresponding to particular challenges at the regional, sub-regional, and national levels. Uncompetitive digital infrastructure, unbalanced adoption strategies, discrepancies between urban and rural developmental conditions, and structural inequalities, coupled with low digital literacy rates may act against the optimal desired result of government digitization reforms (Appiah et al., 2022; Mutiiria et al, 2020). Furthermore, the race between immediate political gains and long-term structural reforms, particularly in countries with weak polity systems, may jeopardize the intended results of liberalization policies aiming at enhancing the economic freedom profile of a country (Singh & Gál, 2020).

3. **Methodology**:

This research uses panel data for 16 countries in the MENA region, during the period 1995-2023. The countries studied are Algeria, Bahrain, Djibouti, Egypt, Iran, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, Turkiye, United Arab Emirates. It elaborates on the impact of digital government on economic freedom while taking into account several factors such as governance, economic growth, inflation, foreign direct investment, and real exchange rates.

The dependent variable in the model is described as follows:
EF stands for the Economic Freedom Index published yearly by the Heritage Foundation (Heritage-Foundation, 2023). It represents economic activity that is built on personal choice, voluntary exchange, open markets, and protection of property rights. It refers to the ability of individuals and businesses to make their own economic decisions, such as what to produce, how to produce it, and where to invest, within a framework of regulatory efficiency. It thus assesses how policies and institutions of a country support or hinder this freedom. The higher the value of the index is, the more the country's economy is conducive for business and investment attraction, while the lower the value is, the more the economy is restrictive and non-competitive and not appealing as an investment destination.

The independent variables in the model are described as follows:
- EGov stands for the E-Government Index published by the World Bank. It measures the degree of government digitization in an economy.
- Governance stands for the square root of the arithmetic mean of the six worldwide governance indicators created by the World Bank to reflect the institutional Quality framework in a country (Kaufmann, Kraay, & Mastruzzi, 2024).

$$\mathbf{Goverance_{it} = \sqrt{[1/6\,(VA_{it} + PS_{it} + GE_{it} + RQ_{it} + RL_{it} + CC_{it})]}} \qquad \mathbf{(1)}$$

Whereby VA stands for Voice and Accountability, PS stands for Political Stability and No Violence, GE stands for Government Effectiveness, RQ stands for Regulatory Quality, RL stands for Rule of Law, and CC stands for Control of Corruption. The measurement of governance quality is transformed by the square root to normalize the skewed distribution of data and interpret diminishing returns; thus, a non-linear relationship is anticipated between the independent and dependent variables.

The Control variables in the model are described as follows:
- GDP growth stands for the square of GDP growth rate (annual %), published by the World Bank World Development Indicators database. The squaring transformation is used to capture the magnitude of the growth irrespective of its direction.
- Inf stands for Inflation, measured by the Consumer Price Index (CPI). Due to incomplete datasets, several data sources were used to collect the CPI. These are the International Monetary Fund database (2024).
- RER is the Real Exchange Rate. It is calculated as RER_{it} = NERit $*CPI_{it}/CPI_{USAt}$, where NER_i is the nominal exchange rate of country (i) in year (t), CPI_i is the consumer price index of country (i) in year (t), and CPI_{USAt} is the consumer price index of the USA in year (t) – whereby USA is considered as the basis as the US dollar dominates the majority of global economic activity. Data for the exchange rates and CPI are taken from the International Monetary Fund.

- FDI stands for Foreign Direct Investment, published by the World Bank World Development Indicators database. It measures the magnitude of foreign investment inflows going into concrete economic activity and not financial markets, bank transfers, remittances, etc.

Therefore, the model used is indicated in the following equation:

$$\mathbf{EF = \beta_0 + \beta_1 EGov_{it} + \beta_2 Goverance_{it} + \beta_3 GDPGrowth_{it} + \beta_4 Inf_{it} + \beta_5 RER_{it} + \beta_6 FDI_{it} + \varepsilon_{it}} \quad \mathbf{(2)}$$

- β_0 is the intercept.
- β_1, β_2, β_3, β_4 and β_5 are the coefficients of each independent variable.
- ε_{it} is the error term, t is the time and i is the country.

Conducting the Hausman test showed that it is best to choose the Fixed-Effect estimation technique because it controls for unobserved heterogeneity that is time-invariant across the panel data. This is the case where a panel dataset of countries with comparable developmental, cultural, business, and political economy contexts ensured that unobserved heterogeneity across countries was controlled.

Descriptive statistics summarize the nature of the data, in terms of mean, standard deviation, skewness and kurtosis, minimum and maximum values, etc. Table 1 below presents the results of the descriptive statistics and shows that the economic freedom index has a significantly large standard deviation value which reflects the large variation of the index across the panel of countries studied. On the other hand, the e-government index shows a high mean value, which can be explained by important efforts for digitizing government services and operations taking place in the MENA region. While GDP growth seems to experience moderate variability, the wide ranges of inflation and real exchange rates underscore macroeconomic instability. As for the governance index, its mean is of a negative value, reflecting the low performance of the countries under study in terms of good governance.

Table 1: Descriptive Statistics

	count	mean	std	min
Year	464.0	2.009000e+03	8.375631e+00	1.995000e+03
Index of Economic Freedom	464.0	5.993384e+01	8.398164e+00	3.450000e+01
E-Government Index	464.0	1.709529e+08	3.791258e+08	0.000000e+00
GDP Growth	464.0	3.869511e+00	4.237027e+00	-2.139990e+01
Inflation CPI	464.0	1.338268e+02	3.712289e+02	1.303748e+00
Real Exchange Rate	464.0	8.308109e+03	4.765428e+04	1.112842e-03
FDI	464.0	2.076010e+09	3.810643e+09	-2.812637e+09
Governance	464.0	-2.682546e-01	4.774909e-01	-1.358400e+00

	25%	50%	75%
Year	2.002000e+03	2.009000e+03	2.016000e+03
Index of Economic Freedom	5.520000e+01	6.035000e+01	6.540000e+01
E-Government Index	6.450859e+05	1.010501e+07	1.614422e+08
GDP Growth	2.085269e+00	3.786452e+00	5.685284e+00
Inflation CPI	6.996898e+01	9.860276e+01	1.162587e+02
Real Exchange Rate	3.835954e-01	3.948990e+00	1.530851e+02
FDI	1.192917e+08	8.919377e+08	2.462162e+09
Governance	-7.101629e-01	-2.715978e-01	8.415982e-02

	max	median
Year	2.023000e+03	2.009000e+03
Index of Economic Freedom	7.770000e+01	6.035000e+01
E-Government Index	2.773535e+09	1.010501e+07
GDP Growth	3.001204e+01	3.786452e+00
Inflation CPI	7.083140e+03	9.860276e+01
Real Exchange Rate	7.445979e+05	3.948990e+00
FDI	3.068754e+10	8.919377e+08
Governance	7.220411e-01	-2.715978e-01

As for the correlation, Table 2 shows that there is a negative correlation between the dependent variable economic freedom index, and each of the independent variables e-government index, inflation, and real exchange rate. There is, however, a positive correlation between the dependent variable economic freedom index, and each of the independent variables GDP growth, FDI, and governance index. It is also interesting that there is a negative correlation between the independent variables e-government index and square of governance index, which opens the floor for further analysis of this relationship. On the other hand, there is a positive correlation between FDI and each of the e-government index and the squared governance index.

Table 2: Correlation

	Year	Index of Economic Freedom	E-Government Index	GDP Growth	Inflation CPI	Real Exchange Rate	FDI	Governance
Year	1.000000	-0.055428	-0.072998	-0.208747	0.189264	0.177923	0.294477	-0.131115
Index of Economic Freedom	-0.055428	1.000000	-0.010303	0.066403	-0.139914	-0.150786	0.103416	0.768014
E-Government Index	-0.072998	-0.010303	1.000000	0.060010	-0.035825	-0.015563	0.114084	-0.026454
GDP Growth	-0.208747	0.066403	0.060010	1.000000	-0.022076	-0.021652	0.059311	0.140716
Inflation CPI	0.189264	-0.139914	-0.035825	-0.022076	1.000000	0.432571	0.004278	-0.182948
Real Exchange Rate	0.177923	-0.150786	-0.015563	-0.021652	0.432571	1.000000	0.104084	-0.159343
FDI	0.294477	0.103416	0.114084	0.059311	0.004278	0.104084	1.000000	0.162312
Governance	-0.131115	0.768014	-0.026454	0.140716	-0.182948	-0.159343	0.162312	1.000000

A set of diagnostic tests are used to study the validity and robustness of the results (Wooldridge, 2019). They are as follows:

- The Heteroscedasticity Breusch-Pagan test, which confirmed the absence of heteroskedasticity ($p = 0.292 > 0.05$), confirming the model's reliability.
- Residual normality analysis which confirmed approximate normality, as the p-value was above the level of significance. Similarly, the Q-Q plot showed the residuals as aligned closely with the theoretical quantiles.
- Multicollinearity Check (Variance Inflation Factor -VIF) for the independent variable. Results showed no multicollinearity as all VIF values were below 5.
- The Durbin-Watson Statistic to test the autocorrelation of the residuals, the results show insignificant autocorrelation.
- The robustness of the model was improved through the transformation of some independent variables, reflecting non-linear relationships between these variables and the dependent variable. In particular, a square root transformation was applied to the governance index to normalize its values, and a square transformation was applied to the GDP growth to secure its magnitude only.

4. **<u>Regression Findings</u>**:

The findings, in Table 3, show a positive yet statistically insignificant relationship between the e-government index and the economic freedom index, with the coefficient $\beta = 1.0604$ and $p = 0.5502$; meaning that government digitization is critical to improving the flexibility of the economy leading to better business environment. The governance factor, in its square root value, also has a positive and statistically significant, with coefficient = 9.4699 and $p = 0.0296$; hence robust quality of institutions is important in developing strong economic freedom. It is worth noting that this relationship is non-linear, as the square root transformation of the quality of institutions diminishes the returns of the quality of institutional reforms. This means that reforms in governance quality or institutional quality reach a point whereby further reforms do not lead to improvement in economic freedom – hence a plateau.

As for the macroeconomic variables, the GDP growth, in its squared value, provides a negative and statistically significant impact on economic freedom, with the coefficient = 0.178 and $p < 0.0001$; revealing that beyond a certain threshold, economic growth may have diminishing returns on economic freedom. Reasons may include structural bottlenecks or the nature of economic growth such as dependence on remittances or extraction of natural resources. On the other hand, the inflation measured by the consumer price index has a positive and statistically significant impact on economic freedom, with coefficient = 0.0289 and $p = 0.0027$, reflecting the role of moderate inflation as a catalyst to market dynamism and economic activity, particularly in the case of resource-dependent developing economies. The real exchange rate also has a positive and significant impact on economic freedom with the coefficient = 0.0008, $p = 0.0037$; as stability in the real exchange rate sends positive signals to free trade, business activities, and investment attraction. In turn, the FDI shows a negative and statistically significant impact on economic freedom, with coefficient = -5.833e-10, $p = 0.0039$, which may be explained by the presence of conditions related to inefficiency in investment allocations, weak governance structures, or external dependencies, which hamper the effect of FDI on economic freedom. As for the constant term which captures unobserved factors, it shows a positive and significant relationship with the economic freedom index, with coefficient = 55.000 and $p < 0.0001$; showing a favorable baseline for an improved economic freedom framework. It reflects unobserved factors related to regional characteristics, polity frameworks, socio-economic conditions, cultural aspects, uncaptured innovation measurements, trade dependencies, international relations, etc.

Table 3: Regression Summary

Parameter Estimates

	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	55.000	2.2843	24.077	0.0000	50.472	59.528
E-Government Index	1.0604	1.7695	0.5993	0.5502	-2.4471	4.5679
GDP_Growth_Squared	-0.0025	0.0005	-5.4704	0.0000	-0.0035	-0.0016
Inflation CPI	0.0289	0.0094	3.0764	0.0027	0.0103	0.0475
Real Exchange Rate	0.0008	0.0003	2.9671	0.0037	0.0003	0.0013
FDI	-5.833e-10	1.976e-10	-2.9519	0.0039	-9.75e-10	-1.916e-10
Governance_Sqrt	9.4699	4.2955	2.2046	0.0296	0.9555	17.984

F-test for Poolability: 14.783
P-value: 0.0000
Distribution: F(7,108)

5. <u>Discussion of Findings</u>:

The findings of this research show that digitizing government operations and services plays a major role in improving the economic freedom of a country. Digital governments, in the broad definition as the technological infrastructure and literacy, policy framework, and societal influence are key in addressing cross-border and domestic challenges. This practice facilitates combatting corruption and enhancing transparency and accountability, the rule of law, and other aspects of institutional quality. It therefore promotes stronger protection of property rights, market openness, and regulatory efficiency; which are the pillars of economic freedom. This finding aligns with the findings of previous studies that argue for the transformative role of digital governments (service, operations, processes, and procedures) on institutional efficacy and economic prosperity. A study (Dhaoui, 2021) also argues that digital government practices enhance the outcomes of governance reforms, by optimizing procedures, reducing transaction costs, fostering stable business environments, fewer barriers to market entry, and better economic freedom standing in the MENA region. His study adds that this is particularly the case in resource-dependent countries that aim towards economic diversification. These results on the MENA region are also consistent with those of other geographic regions. For instance, digital government manifested in public sector service delivery optimization and reduced inefficiencies facilitated further private sector investments in infrastructure projects in sub-Saharan Africa (Baba, 2019); therefore, promoting economic growth and lower inflation rates. Similarly, the provision of e-government practices along with strengthening institutional systems in Asia-Pacific allowed for the reduction of corruption – an important aspect of strengthening economic freedom (Basyal et al., 2018). These comparisons flag up the issue of digital literacy and other technical and physical infrastructure disparities among regions. While the Asia-Pacific region is recognized for its strong digital government systems, the MENA region – with its internal disparities – tends to align with sub-Saharan Africa. These comparisons open the discussion for the need to customize digital government strategies that are favourable to distinct regional infrastructure capacities. (Masonta, 2023) highlights the conditional nature of reforms related to digital government whereby their benefits may be suboptimal in marginalized areas that suffer from a digital divide. This digital divide hinders the absorptive capacity of local economies to realize inclusive economic growth and wider fundamentals for economic freedom and attraction of investments.

The findings of this research also highlight the importance of considering a holistic package of good governance reforms to promote economic freedom. While previous studies explore the impact of individual indicators of the quality of institutions on aspects of economic prosperity, this research contributes to the literature by constructing a consolidated governance indicator and studying its impact on economic freedom in the MENA region. The square root transformation of the governance index underscores diminishing returns. Governance reforms to a base of weak institutional systems provide a significant influence on economic freedom; this impact diminishes as the institutional quality improves. The nature and scope of governance systems and practices also vary across different regions, markets, and contexts. The results of this research align with the findings of previous studies exploring the critical role of governance reforms in enhancing the business environment in the MENA region (Barkhordari & Azimi, 2021). At a sub-regional level, (Al-Naser & Hamdan, 2021) argue that the quality of regulations and government effectiveness in the GCC countries strongly influence economic prosperity. Almustafa et al. (2023) further extend this analysis, capturing the impact of economic shocks, such as that of the COVID-19 crisis, asserting the important role of governance reforms in limiting investor uncertainties and allowing for the adaptation of businesses to volatile conditions, thus mitigating the influence of economic shocks. On the other hand, the weak institutional base in sub-Saharan Africa hampers governance reforms effectiveness that is needed to promote economic prosperity. This is reflected in the work of (Liu & Feng, 2022) who argue that weak institutional capacity to implement reform has an adverse effect on conditionalities of economic freedom.

This research further delves into the interplay between government digitization, institutional governance, and macroeconomic stability factors, and their role in strengthening economic freedom that is crucial to building a conducive business environment in the MENA region. This is manifested by the research's findings on the role of GDP growth, stability of price levels, and real exchange rates in establishing the confidence of investors in the region's markets, managing costs, and reducing uncertainty, which are critical factors for enabling long-term business planning.

Regarding the role of GDP growth in enhancing economic freedom, the former opens more market opportunities for the private sector, as it reinforces investor confidence in the domestic market and regulatory systems. This is a self-generating circle, ceteris paribus, as growth promotes further investments, which in turn leads to more economic growth. For instance, economic diversification measures in oil-exporting MENA countries, contributing to economic growth, have opened the floor to improving economic freedom indicators, which in turn lead to better business environments (Tagliapietra, 2019). Empirical evidence from other parts of the world shows similar dynamics, as the expansion of economic activity and enhanced economic growth rates allow policymakers to invest more in structural reforms that promote economic freedom, such as trade liberalization, protection of property rights, and reducing market inefficiencies. This is evident in the 'Next 11' countries, the Eurozone, sub-Saharan Africa, and Asia-pacific countries, as demonstrated in the work of (Sharma & Tokas, 2024; Cervelló-Royo et al., 2023; Musamba, 2022; Mahmood et al., 2021). It is worth noting though that the impact of GDP growth on economic freedom may be weak if not associated with strong institutional capacities. Xu et al. (2021) give an example of the critical role of market diversification policies and strong governance systems in alleviating the impact of GDP growth on economic freedom in East Asian countries.

As for inflation, this research shows that its volatility plays a counter-effective role in the economic freedom in the MENA region, which is consistent with the findings of (Hossain & Rokonuzzaman, 2018), who caution a presumed negative influence of inflationary pressure on GDP growth potentials in this region, as it feeds into systemic uncertainties about market and economic prospects, acting as a repellent against new investment and consumption alike. These findings also align with studies on West African countries, whereby high levels of inflation contribute to worsened economic inefficiencies, and inflation thresholds underscore a critical relationship between finance and economic growth (Ehigiamusoe et al., 2019). In Asia-Pacific, attempts to stabilize inflation through prudent monetary policies posit improvements in other macroeconomic aggregates necessary for strengthened economic freedom conditionalities (Kim & Mehrotra, 2018).

Similarly, exchange rate volatility negatively influences economic freedom in the MENA region, as it amplifies market uncertainties, business risks, and transaction costs which have adverse effects on investment attraction and business opportunities. These factors are critical for the protection of property rights open markets and cross-border business operations. This phenomenon is seen in African countries, whereby volatility of the real exchange rate – originating from fluctuations in the currency and or inflation – prohibits necessary structural transformations to create prudent and stable business environments (Umoro & Effiong, 2023; Fofanah, 2022). Tagliapietra (2019) identifies that exchange rate volatility coupled with inflationary pressure sweeps out the competitiveness of oil-exporting countries and renders their economies repulsive to foreign direct investments. Intensified by dependence on fluctuating oil revenues, combating exchange rate volatility requires the introduction of sound monetary policies and economic diversification strategies similar to the strategies implemented in East Asia and certain regions of

Sub-Saharan Africa (Xu et al., 2021; Hailu & Kipgen, 2020; Dada, 2020; Yabu & Kimolo, 2020; Fofanah, 2022).

The counterintuitive impact of FDI on economic freedom in the MENA region may indicate absorptive capacity challenges in the host economies which reduce the impact of new FDI on aspects of economic freedom, such as weak governance systems and inadequate regulatory frameworks. For instance, in economies heavily based on extractive activity, FDI is primarily channeled to these sectors away from economic activities that reflect liberalization, inclusion, or institutional development (Sulemana & Kofi, 2023). Moreover, continuous dependence on cross-border capital inflows triggers vulnerability to external shocks; therefore, compromising prospects of economic freedom. Empirical evidence from sub-Saharan Africa shows that the impact of FDI on economic freedom is highly related to the presence of strong institutional setup and sectoral diversification of investments (Dia & Ondoa, 2023); while in the case of East Asia, robust governance frameworks, and prudent diversification strategies allow for a concrete impact of FDI on various pillars of economic freedom (Liu & Feng, 2022). Therefore, converting the unsatisfactory impact of FDI on economic freedom in the MENA region requires installing a set of preconditions for governance reforms and economic diversification plans.

6. **Conclusion**:

As the relationship between economic freedom, governance structures, and e-government infrastructure in the MENA region is yet not sufficiently explored, this research contributes to the literature by considering the unique characteristics of the region. It explores new drivers of economic freedom in the MENA region, by introducing the notion of digital government into the analysis. It identifies structural challenges and cohesively incorporates institutional and macroeconomic factors to analyze the business environment profile in the region, navigating into the interplay between these conditionalities. It further enhances the literature by considering a comprehensive governance measurement for the quality of institutions, rather than utilizing them individually. It thus provides a deeper understanding of novel potential drivers of economic growth and the challenges of development in an understudied area characterized by diverse economic and institutional fundamentals. By providing empirical evidence that supports theories of economic growth, this research offers a model that can be used to compare the economic freedom dynamics across different geographic regions and to propose solutions to challenges.

Five years after the onset of the COVID-19 crisis, the global, regional, and sub-national digital divides acted as frontline factors contributing to economic recovery that is inclusive and pertinent to job creation and socio-economic stability. More challenges emerged post the Covid-19 era, primarily related to global inflationary pressure, sovereign debt bubbles, political instabilities and security challenges. The MENA region economy, with its vast scope of diversification, is not immunized from the repercussions of these challenges. Policymakers in the MENA region strive to improve their digital infrastructures, aiming at attracting more investments to diversify away from oil dependency, remittances, and rentier economic models. However, robust digital government frameworks remain a must to enforce integrity in economic activity and promote market certainty needed for investor attraction, thus allowing for further economic freedom. In the MENA region, digital government has recently emerged as a crucial factor in enhancing the ease of doing business and fast-tracking economic growth. The MENA region, characterized by diverse economic conditions and governance structures, provides a unique landscape to examine the impact of e-government interventions on the business environment and economic freedom.

The findings of this study demonstrate a strong argument for policymakers to prioritize digital government reforms to leverage the level of economic freedom in their economies. It is crucial, though, to realize the necessity of adopting cohesive and holistic strategies, incorporating institutional governance and fiscal and monetary policies, to harness the effects of digital government economic freedom. The digital infrastructure and frameworks within the MENA region are not homogeneous, as cultural and political economy differences affect social inclusion planning (Dhaoui, 2021). Also, bridging the digital divide in the MENA region, among its member countries and within the individual nation is an important reform priority, to promote competitiveness and facilitate inclusive economic growth that is driven by business activities, as compared to rentier state systems. This means prioritizing investments in digital capacities – physical infrastructure and digital literature. Moreover, harmonization between institutional governance reforms and digital government reforms, and converging short-term results with long-term structural transformation, are crucial to optimize their benefits on factors of economic freedom, particularly in fragile political economy contexts (Anvari et al., 2023; Ertuğrul & Pirgaip, 2021). Reforms that are inadequately planned jeopardize their success leading to more digital disparities.

Despite strong efforts, the MENA region remains at low positions in terms of global indicators of economic growth driven by FDI and ease of doing business. This reflects that a significant knowledge gap remains concerning the impact of digitization and the digital government framework of businesses and investments. In comparison with other regions in the world, both the MENA region and sub-Saharan Africa suffer from digital inequality and need to give preference to bridging the digital divide to strengthen their competitive edge in the world economy (Castro & Lopes, 2022). Both regions also suffer from a deficiency in effective governance (Myovella, Karacuka, & Haucap, 2021), which is crucial for enhanced economic freedom, unlike East-Asian economies exploiting sound governance transformations (Li, Park, & Bao, 2019). Furthermore, the MENA region aligns with Asia-Pacific and West Africa (Ábel & Siklos, 2023) in the need for robust macroeconomic policies, to stabilize inflation and real exchange rates which are critical factors in promoting market certainty and investment attraction and retention. Reaping the outcomes of economic freedom requires the MENA countries to adopt policies and regulatory frameworks that encourage export-driven economic activities, such as the East-Asian model, and investments in business-promoting infrastructure projects, as in the case of sub-Saharan Africa sustainability (Petropoulos, 2011; Appiah et al., 2022).

It is worth noting also that addressing these institutional and macroeconomic conditionalities needs to consider the non-linear interactions between them. This research presents empirical evidence on the non-linear relationship between governance and economic freedom in the MENA region, which in turn strongly affects the effectiveness of reform policies and strategies. This opens for further research using other econometric techniques, such as dynamic panel data models, principal component analysis, and factor analysis to reduce the dimensionalities of large data. Further research can also investigate other contextual factors affecting economic freedom, such as cultural, political, and inclusive human development factors in the MENA region. Also, comparative studies within the MENA region between resource-rich and resource-deficient economies influencing economic freedom can be inspected.

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