

Financial Development and ESG Performance: Insights from MENA Countries

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ABSTRACT

This study examines the relationship between financial development and environmental, social, and governance (ESG) performance in 17 countries in the Middle East and North Africa (MENA) region from 2012 to 2020. The analysis incorporates various financial development indicators, including overall financial development (FD), financial institutions (FI), and financial markets (FM), to evaluate their influence on ESG performance. The study controls for trade openness, economic growth, and foreign direct investment. Results indicate that financial development in MENA countries significantly negatively impacts ESG scores. Economic growth positively correlates with improved ESG performance, while increased trade openness has a negative influence. Additionally, the advancement of FM negatively affects ESG scores, whereas the impact of FI is statistically insignificant. Using the Generalized Method of Moments (GMM) estimator, the findings consistently demonstrate the adverse effects of FD and FM on ESG performance in the MENA region. These results suggest that policymakers in the MENA region can enhance environmental sustainability and achieve long-term economic growth by promoting sustainable financial development and economic policies.

ملخص

تبحث هذه الدراسة العلاقة بين التطور المالي والأداء البيئي والاجتماعي والحوكمة (ESG) في 17 دولة في منطقة الشرق الأوسط وشمال إفريقيا خلال الفترة من عام 2012 إلى 2020. يشمل التحليل مجموعة من مؤشرات التطور المالي، بما في ذلك التنمية المالية الشاملة والمؤسسات المالية والأسواق المالية لتقييم تأثيرها على الأداء البيئي والاجتماعي والحوكمة. وتأخذ الدراسة في عين الاعتبار عوامل الانفتاح التجاري والنمو الاقتصادي والاستثمار الأجنبي المباشر. وتشير النتائج إلى أن التطور المالي

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في بلدان منطقة الشرق الأوسط وشمال إفريقيا يؤثر بشكل سلبي كبير على درجات الأداء. وكما يرتبط النمو الاقتصادي إيجابيا بتحسين الأداء البيئي والاجتماعي والحوكمة، في حين أن الانفتاح التجاري المتزايد له تأثير سلبي. بالإضافة إلى ذلك، تؤثر تطورات الأسواق المالية سلبا على درجات الأداء، بينما يظل تأثير المؤسسات المالية غير ذي دلالة إحصائية. وباستخدام أسلوب اللحظات المعممة (GMM) المُقدّر، تثبت النتائج بشكل متسق الآثار السلبية للتنمية المالية والأسواق المالية على الأداء البيئي والاجتماعي والحوكمة في منطقة الشرق الأوسط وشمال إفريقيا. وتشير هذه النتائج إلى أن صانعي السياسات في المنطقة يمكنهم تعزيز الاستدامة البيئية وتحقيق نمو اقتصادي طويل الأجل من خلال تعزيز تطوير سياسات مالية واقتصادية مستدامة.

RÉSUMÉ

Cette étude examine la relation entre le développement financier et la performance environnementale, sociale et de gouvernance (ESG) dans 17 pays de la région du Moyen-Orient et de l'Afrique du Nord (MENA) entre 2012 et 2020. L'analyse intègre divers indicateurs de développement financier, notamment le développement financier global (DF), les institutions financières (IF) et les marchés financiers (MF), afin d'évaluer leur influence sur la performance ESG. L'étude tient compte de l'ouverture commerciale, de la croissance économique et de l'investissement direct étranger. Les résultats indiquent que le développement financier dans les pays de la région MENA a un impact négatif significatif sur les scores ESG. La croissance économique est en corrélation positive avec l'amélioration des performances ESG, tandis que l'ouverture commerciale a une influence négative. En outre, l'avancement de la FM affecte négativement les scores ESG, tandis que l'impact de l'IF est statistiquement insignifiant. En utilisant l'estimateur de la méthode généralisée des moments (GMM), les résultats démontrent de manière cohérente les effets négatifs de la FD et de la FM sur la performance ESG dans la région MENA. Ces résultats suggèrent que les décideurs politiques de la région MENA peuvent améliorer la durabilité environnementale et atteindre une croissance économique à long terme en promouvant un développement financier durable et des politiques économiques.

Keywords: Financial development, environmental, social, governance, ESG performance, Middle East, North Africa, MENA

JEL Classification: C33, C58, G2, Q01, Q56

1. Introduction

Over the past few decades, the Middle East and North Africa (MENA) region has witnessed substantial economic progress, with many nations transitioning from conventional, agrarian economies to contemporary, service-based ones. Several advantages have resulted from this transformation, including increased trade, employment opportunities, and improved living standards for many people. However, this expansion has also been accompanied by challenges, especially concerning environmental, social, and governance (ESG) issues.

Thus, research on the impact of financial development on ESG performance needs to be improved. Previous research focused on several issues, such as finance and growth (Ahmad & Malik, 2009; Al-Malkawi & Abdullah, 2011; Bist, 2018), finance and environment (Tamazian et al., 2009; Omri et al., 2015), finance and poverty (Jeanneney & Kpodar, 2011; Uddin et al., 2014; Zhang & Naceur, 2019), and finance and volatility (Bezooijen & Bikker, 2019; Ma & Song, 2018; Smolo et al., 2021). At the same time, previous studies explored the impact of ESG on firms' financial performance and values (Velte, 2017; Naeem et al., 2022; Zhou et al., 2022).

Furthermore, Onda and Seabrook (2022) found that financial development positively correlates with regulatory quality, political stability, and the absence of violence. Conversely, it shows a negative association with voice and accountability, as well as government effectiveness. Furthermore, the influence of these governance indicators on financial development is comparatively stronger in high-income countries than in low-income countries. Another study claims that to achieve sustainable economic growth while simultaneously reducing carbon dioxide emissions, policymakers should focus on regulating and improving the performance and effectiveness of domestic institutions (Abid, 2017).

Besides the above-mentioned studies, only a few studies have delved into the correlation between financial development and ESG. For instance, a study conducted by Ng et al. (2020) unveiled the significance of financial development in Asia as a catalyst for pursuing ESG objectives. It established that countries with more robust financial systems tend to achieve higher levels of ESG attainment. Similarly, Saud et al. (2019) discovered that greater financial development, FDI, and trade openness

improve the environment while increased economic growth and electricity consumption harm it. The results obtained by Al-Mulali et al. (2015), from the dynamic ordinary least squares (OLS) and the Granger causality test, indicate that financial development can enhance environmental quality both in the short term and long term, primarily through its negative impact on CO₂ emissions.

This relationship is far from being conclusive. The study by Håkansson and Salu (2021) reveals a multifaceted relationship, indicating that financial development has diverse effects on ESG performance and varies across different levels of financial development. Likewise, according to Adams and Klobodu (2018), financial development has a significant impact on environmental degradation only after accounting for the political regime. In contrast, Ganda (2019) found that financial development (measured by domestic credit to the private sector by banks) shows a negative and significant relationship with carbon emissions, greenhouse gases, and sustainability. In another study, the fully modified ordinary least squares analysis demonstrated that in the long run, GDP growth, urbanization, and financial development contributed to increased CO₂ emissions. In contrast, trade openness has the opposite effect of reducing CO₂ emissions (Al-Mulali, Ozturk, et al., 2015).

It is clear that despite recent discoveries, much remains to be discovered about the complex relationship between financial development and ESG performance, particularly in MENA countries. This is why we are focusing on this study. Scholars suggest that the connection may be more intricate than initially thought, with factors like political stability and cultural norms potentially playing significant roles. Therefore, further research in this area is essential to gain deeper insights into how financial development can influence ESG performance. This understanding would help identify effective strategies to promote sustainable and responsible investments in MENA nations.

With this in mind, our study aims to address a significant gap in knowledge by exploring the relationship between financial development and ESG performance in 17 MENA countries from 2012 to 2020. Previous studies have yet to adequately focus on the direct link between financial development and ESG, and this research endeavors to fulfill that need. Our objectives are threefold: first, to determine the existence of a finance-ESG nexus; second, to analyze the correlation between financial development and overall ESG performance in MENA nations; and third,

to evaluate the impact of financial development on the comprehensive ESG performance of these countries. Based on the above, this study will test the following three hypotheses, namely:

H₁: There is a relationship between financial development (FD) and the overall ESG performance in MENA countries.

H₂: Financial development (FD) positively influences the overall ESG performance in MENA countries.

H₃: Financial institutions (FI) and financial markets (FM), as part of the overall financial development (FD), affect the overall ESG performance in MENA countries.

The remainder of the study consists of a brief overview of data and methodology, followed by discussion and concluding remarks.

2. Data and Methodology

This chapter delves into the diverse data sources and variables implemented in our research. Along with that, we will expound on the empirical methods adopted to examine the data and arrive at well-founded conclusions. The main goal of this chapter is to provide a detailed explanation of the research process, and the tools used to collect and analyze the data, ensuring that the results are reliable and valid.

2.1. Data and Sample Selection

This study aims to advance knowledge in this area by investigating this issue in MENA countries. Data used in the study includes ESG scores, the financial development index, economic development, foreign direct investment, and trade openness. This is consistent with previous studies done by Abdouli and Hammami (2018), Abid (2017), Saud et al. (2019), Ng et al. (2020), and Håkansson and Salu (2021).

The selection of countries and the study period is dictated by the availability of the data. All data is sourced from various World Bank databases. Data on ESG is extracted from the *Environment, Social, and Governance (ESG) Data*. Data on GDP per capita, trade openness, and foreign direct investment (FDI) are from *World Development Indicators*. Finally, data on financial development are from the updated dataset provided by Svirydzenka (2016) through the IMF database. Due to the

unavailability of data, this study covers 17 out of 21 MENA countries for the 2012-2020 period. The countries in the sample are Algeria, Bahrain, Djibouti, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Tunisia, United Arab Emirates.³

The main dependent variable is the ESG index derived from *Environment Social and Governance (ESG) Data*. It represents an equal-weighted composite index based on 34 available indicators (out of 71). International Monetary Fund's financial development index is a useful tool for assessing financial progress. It is an innovative measure of financial development encompassing the depth, access, and efficiency of financial institutions and financial markets. Accordingly, this study employs three indices suggested by Svirydzenka (2016): an index of overall financial development (FD), an index of financial institutions (FI), and an index of financial markets (FM). These indices represent financial development more comprehensively.

Following the existing literature, this study uses several control variables to control for economic development, foreign direct investment inflows, and trade openness. It is believed that these variables are significant determinants of environment and human well-being (Ng et al., 2020).

A vast collection of literature emphasizes the significance of economic growth in environmental quality and poverty alleviation. According to the World Bank, for instance, an increase in income per capita can benefit both the environment and human well-being (Tamazian et al., 2009). Shahbaz et al. (2016) note that economic development raises living standards, potentially creating more employment opportunities as manufacturers prepare to meet surging demand. As such, economic growth plays a crucial role in determining life quality. An increase in income levels, on the other hand, is associated with an increase in spending on environmentally friendly technology since an economic expansion encourages the purchase of such technology (Grossman & Krueger, 1995). Yet, there has been criticism of economic development's role in promoting cleaner production. A study by Georgescu-Roegen (1971) and Daly (1977) noted that income increases result in increased demand for goods and production, thereby increasing pollution.

³ Iraq, Libya, Palestine, Syria, and Yemen were excluded from the analysis due to incomplete data.

Considering these opposing viewpoints, it remains unclear how economic development influences ESG performance.

This research builds upon the work of Abid (2017), Abdouli and Hammami (2018), and Ng et al. (2020), who incorporated trade openness, as proxied by the per capita sum of trade of goods and services, in their examinations of the relationship between finance and the environment. Despite abundant research on the association between trade openness and ESG factors, the results remain inconclusive. Trade openness has the potential to generate greater energy consumption, which may contribute to air pollution (Ang, 2009). At the same time, trade openness can potentially foster the growth of non-polluting industries (Al-Mulali, Ozturk, et al., 2015; Al-Mulali, Tang, et al., 2015) and expedite the adoption of green technologies that benefit the ecosystem (Dogan & Turkekul, 2016). With regard to social well-being, trade openness may stimulate additional job opportunities at the local level. Such growth in employment opportunities can lead to higher household incomes, promoting social progress.

In addition, the extant body of literature on environmental quality often employs foreign direct investment (FDI) as an indicator of economic openness, with scholars like Chua (1999) and Jalil and Feridun (2011) supporting this approach. Such studies posit that FDI inflows per capita can potentially alleviate poverty and enhance environmental health by facilitating knowledge transfer, technological innovation, poverty reduction, higher wage payments, job creation, and export promotion. Our investigation advances the argument that foreign investors strongly commit to sustainability, transparency, and governance. As a result, the presence of foreign firms investing in the economy is assumed to exert pressure on local governments to prioritize ESG issues.

2.2. Econometric Model

The literature features various estimation techniques used to investigate the link between financial development and ESG performance. These techniques range from the pooled OLS (POLS), random effect (RE), and fixed effects (FE) to the instrumental variable (IV) estimator and the generalized methods of moments (GMM) method.

The random effect (RE) method operates under the assumption that each country within our sample has its own distinct error term. For this

approach to be effective, these individual error terms must not be correlated with our explanatory variables. Should this assumption be valid, the resulting RE estimation would be consistent and biased. On the other hand, the fixed effects (FE) method, also known as the least squares dummy variable (LSDV), assumes unique constants for each country in the sample (Asteriou et al., 2005; Flannery & Hankins, 2013).

In this study, however, this relationship has been analyzed through the utilization of panel data methodology. Compared to cross-sectional and time-series analysis, the panel data approach holds several advantages as it has more degrees of freedom and addresses the omitted variables problem (Hsiao et al., 1995; Hsiao, 2007). At the same time, the panel data analysis is not free from flows. According to Driscoll and Kraay (1998), many panel data suffer from cross-sectional or ‘spatial’ dependence. This is particularly evident in macroeconomic studies where groups (states, countries, or industries) are non-randomly selected over time and are “subject to both observable and unobservable common disturbances.” If the issue of spatial dependence is not addressed, standard techniques would result in consistent parameters but with inconsistent standard errors, as mentioned by Driscoll and Kraay (1998) and Hoechle (2007). To achieve this purpose, we utilize a model developed by Hoechle (2007) that provides POLS and FE (within) estimates, along with Driscoll and Kraay’s (1998) standard errors. The Hausman test (Hausman, 1978) selects between POLS and FE models. A significant p-value ($p < 0.05$) of the F statistic from the test of $\gamma = 0$ rejects the null and supports FE. Otherwise, we should rely on the POLS estimator (see Hoechle, 2007).

Following the above recommendations, this study implements similar techniques to those used in more contemporary research studies, such as the work of Ganda (2019) and Ng et al. (2020). In essence, two approaches were employed in this analysis, namely, static models and dynamic regression. In the general static panel model, the formulation is presented as follows:

$$ESG_{i,t} = \alpha + \beta FD_{i,t} + \gamma GDP_{i,t} + \delta TO_{i,t} + \varepsilon FDI_{i,t} + \mu_{it} \quad (1)$$

where for country i (the cross-sectional dimension) at time t (the time dimension), ESG is the ESG index scores for the i th country at the time t ; α is the intercept; FD is the financial development index; GDP is GDP per capita, PPP (constant 2017 international \$); TO is the sum of exports and imports as percentage of GDP; FDI is foreign direct investment, net

inflows as percentage of GDP;⁴ and μ_{it} is the error term. Estimation using model equation (1) above will show the effects of financial development and other control variables on ESG in our sample countries.

As pointed out above, this study relies on the pooled ordinary least squares (OLS) and the fixed effects (FE) models as the baseline models. To ensure the soundness of our analysis, we conducted a robustness check by replicating the regression models using alternative variables of interest, specifically the FI development index and the FM development index. This procedure is of paramount importance as it uncovers the distinct effects of each of these indexes on the ESG performance in MENA countries. The alternative models are as follows:

$$ESG_{i,t} = \alpha + \beta FI_{i,t} + \gamma GDP_{i,t} + \delta TO_{i,t} + \varepsilon FDI_{i,t} + \mu_{it} \quad (2)$$

$$ESG_{i,t} = \alpha + \beta FM_{i,t} + \gamma GDP_{i,t} + \delta TO_{i,t} + \varepsilon FDI_{i,t} + \mu_{it} \quad (3)$$

This study employs the system generalized method of moments (GMM) estimator to investigate the relationship between financial development and ESG within the framework of a general dynamic linear model. The use of this estimator is favored as it accommodates serial correlation of random errors and heterogeneity, which leads to greater efficiency gains in estimation (Arellano & Bover, 1995). The model can be represented as follows:

$$ESG_{i,t} = \alpha + \beta ESG_{i,t-1} + \gamma FD_{i,t} + \delta GDP_{i,t} + \theta TO_{i,t} + \varepsilon FDI_{i,t} + \mu_{it} \quad (4)$$

$$ESG_{i,t} = \alpha + \beta ESG_{i,t-1} + \gamma FI_{i,t} + \delta GDP_{i,t} + \theta TO_{i,t} + \varepsilon FDI_{i,t} + \mu_{it} \quad (5)$$

$$ESG_{i,t} = \alpha + \beta ESG_{i,t-1} + \gamma FM_{i,t} + \delta GDP_{i,t} + \theta TO_{i,t} + \varepsilon FDI_{i,t} + \mu_{it} \quad (6)$$

where $ESG_{i,t-1}$ is the 1-year lagged value of the dependent variable, and the rest of the variables remain the same. Incorporating this variable aims to capture the persistence of ESG within the framework. A thorough analysis of the GMM estimator is provided by Arellano and Bover (1995).

This research postulates that the scores measuring the impact of companies on the environment, society, and governance (ESG) are intricately linked to the development of financial systems. As firms and financial institutions adopt more sustainable business practices, it could

⁴ ESG, GDP, TO and FDI variables are used in natural logarithm form.

potentially affect the growth of financial systems. ESG concerns are now factoring into financial market lending and investment decisions. The greater involvement of companies in ESG initiatives could lead to more funds being invested, thereby boosting financial development. The ESG scores could have far-reaching effects on the development of financial systems and, thus, qualify as endogenous variables. Improved financial development could lead to higher ESG scores, thereby attracting additional funds and further strengthening the financial system (Weber, 2014; Ng et al., 2020). However, due to insufficient empirical data, the exact nature of these interdependencies remains unclear. Consequently, this study considers financial development as an endogenous variable that could impact ESG scores and vice versa.

3. Estimation Results and Discussions

3.1. Descriptive Statistics

Before we discuss the main results of our analysis, we will first provide some descriptive statistics. Table 1 provides descriptive statistics for the MENA countries under investigation. The mean value of the ESG index⁵ (ESG) is 4.25 with a standard deviation of 0.095 and ranging from 4.017, that is reported for Lebanon in 2019 to 4.609 for Jordan in 2014. The mean FD (considering both FI and FM) of the sample countries is 0.33, with a standard deviation of 0.145. The lowest (0.09) was reported in Sudan throughout the study period, while the highest (0.59) was reported in Israel in a few years. The mean values for FI and FM are 0.383 and 0.266, with the lowest and the highest values of 0.17 and 0 and 0.76 and 0.74, respectively. It is obvious that FI are better developed in the MENA countries compared to FM. Furthermore, given the mean value of 0.33 for the overall FD in the MENA countries, it can be said that it is relatively low, given that the scale is from 0 to 1.

Table 1 also reveals significant variations among the sample countries regarding GDP per capita. The sample average is \$29,567.36, with a very high standard deviation of \$25,802.17. The lowest GDP per capita of only \$3,664.26 was reported in the case of Djibouti in 2013, while the highest (astonishing \$110,931.51) was recorded by Qatar in 2012. Trade openness, which represents the ratio of the sum of total exports and imports to GDP, ranges from 0.757 to 347.997 with a mean of 91.95 and

⁵ The values of ESG index are expressed in natural logarithm form.

a standard deviation of 61.37. Finally, the average FDI inflow for the sample countries is 2.406, with a standard deviation of 2.364 and ranging from -2.76 to 14.

The study uses Pearson correlation analysis to investigate the strength and direction of the linear relationship between the variables under investigation. As evident from

Table 2, the overall FD index and FM as its subindex have a significant and positive correlation to the ESG index. FI, as another subindex of FD, has a positive correlation to the ESG index as well. However, this correlation is insignificant. In short, these results suggest that countries with better-developed financial systems tend to have better ESG results.

As for our control variables, it can be seen from the correlation results that they have an insignificant effect on ESG. Nevertheless, a positive sign is evident in the case of GDP, showing that better economies score better ESG results. Negative and insignificant correlations are detected between TO and FDI on one side and ESG scores on the other. As multicollinearity may be an issue in the sample data and cause some biased statistical results, the study employs the variance inflation factor (VIF). Based on the results provided in

Table 2, it is obvious that our data is free from multicollinearity issues, as the mean VIF value is 2.06, which is below the cut-off point of 5.

3.2. Financial Development and ESG Performance: Static Models

As pointed out earlier, this study applies both static and dynamic models to investigate the way financial development impacts ESG performance. Under both approaches, the study uses ESG as the dependent variable and financial development as the main independent variable. In addition, the study follows the existing literature and uses several control variables, namely per capita GDP, trade openness, and FDI inflows as a percentage of GDP (Tamazian et al., 2009; Jalil & Feridun, 2011; Shahbaz et al., 2016; Abid, 2017; Abdouli & Hammami, 2018; Ng et al., 2020).

This subsection presents and discusses the estimation results of static models using pooled OLS (POLS) and fixed effects (FE). In the following subsection, the study will rely on dynamic models using GMM estimations. The results are compared primarily to those reported by Ng et al. (2020) as it is our base reference article. It is also important to note that all models used the time effects. However, these results are not included in the reporting tables for simplicity and following other studies.

To avoid the cross-sectional or ‘spatial’ dependence in panel data that may result in consistent parameters but with inconsistent standard errors, the study relies on Hoechle’s (2007) model that provides POLS and FE (within) estimates, along with Driscoll and Kraay’s (1998) standard errors. Choosing between the two (POLS or FE) approaches is done using the Hausman test, which says that if a significant p-value is lower than 5%, we should reject the null and rely on FE estimation results. Otherwise, the POLS estimation results are preferred (see Hoechle, 2007).

Table 3 provides results based on static models using POLS and FE. Based on the Hausman test and its p-value (<5%), the preference is given to FE estimation results. The FE models are used to take care of country heterogeneity as it implies panel regression without instruments. Hence, the results will be discussed based on models (2), (4), and (6). The overall model fit is confirmed by very high F-statistics with significant p-values in all models. Looking into model (2), it shows that about 25% of variations in ESG scores are explained by the variables used in the model. The main independent variable, FD, is found to have a significant but negative impact on ESG score. The FD coefficient of -0.441 indicates that as financial development increases in the MENA countries by 1%, this would harm ESG score by about 0.44%. While these results are contrary to the findings reported by Ng et al. (2020), Saud et al. (2019) and Al-Mulali et al. (2015), they are in conformity with those reported by Al-Mulali, Ozturk, et al. (2015), Adams and Klobodu (2018), Ganda (2019), and partially with those by Håkansson and Salu (2021). This situation may arise from weak ESG regulations and a lack of sustainable financial incentives in MENA countries. Furthermore, the methodology employed, along with the data sample and the period analyzed, could also contribute to these results.

Table 1: Descriptive Statistics

Variable	Sign	Obs.	Mean	Std. Dev.	Min	Max
ESG Index	ESG	153	4.253	.095	4.017	4.609
Financial Development	FD	153	.33	.145	.09	.59
Financial Institutions	FI	153	.383	.131	.17	.76
Financial Markets	FM	153	.266	.208	0	.74
GDP per capita, PPP (constant 2017 int. \$)	GDP	153	29,567.36	25,802.17	3,664.26	110,931.51
Trade (% of GDP)	TO	150	91.953	61.371	.757	347.997
Foreign direct investment, net inflows (% of GDP)	FDI	153	2.406	2.364	-2.76	14

Source: Author’s own calculations.

Table 2: Pairwise Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) ESG Index	1.000						
(2) Financial Development	0.174*	1.000					
(3) Financial Institutions	0.049	0.738*	1.000				
(4) Financial Markets	0.208*	0.906*	0.383*	1.000			
(5) GDP per capita, PPP (constant 2017 int. \$)	0.157	0.751*	0.397*	0.781*	1.000		
(6) Trade (% of GDP)	-0.007	0.339*	0.209*	0.326*	0.383*	1.000	
(7) Foreign direct investment, net inflows (% of GDP)	-0.104	-0.063	0.078	-0.139	-	0.158	1.000
VIF		2.51	1.25	2.70	3.09	1.33	130

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The mean of VIF is 2.06.

Source: Author's own calculations.

The results also show that as MENA economies grow (GDP = 2.516), they will positively contribute to the ESG score. This aligns with prior expectations, as affluent countries are better equipped to tackle issues related to the ESG agenda. However, as these economies become more open, it may affect their ESG scores negatively, as the TR coefficient is -0.195.

Table 3: Static Models Estimation Results - POLS & FE

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	POLS	FE	POLS	FE	POLS	FE
FD	0.128* (0.067)	-0.441* (0.194)				
FI			0.029 (0.079)	0.481 (0.426)		
FM					0.107 (0.070)	-0.296** (0.093)
IGDP	0.023 (0.141)	2.516*** (0.553)	0.167** (0.071)	2.430*** (0.514)	-0.011 (0.203)	2.558*** (0.542)
TR	-0.020*** (0.005)	-0.195*** (0.014)	-0.020*** (0.005)	-0.208*** (0.014)	-0.019*** (0.005)	-0.197*** (0.013)
FDI	-0.062 (0.072)	0.017 (0.033)	-0.044 (0.056)	0.008 (0.029)	-0.055 (0.078)	0.023 (0.033)
Constant	4.258*** (0.231)	1.049 (0.797)	4.066*** (0.132)	0.864 (0.761)	4.314*** (0.336)	0.920 (0.794)
Year Dummy	YES	YES	YES	YES	YES	YES
No. of observations	150	150	150	150	150	150
No. of countries	17	17	17	17	17	17
R2	0.141	0.251	0.127	0.241	0.146	0.261
F-stat.	8.812	9730.372	6.514	12646.090	26.960	69830.050
F-stat. p-val.	(0.002)	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)
Hausman		69.275		27.754		84.825
Hausman p-val.		0.000		0.000		0.000

Note: Regression with Driscoll-Kraay standard errors. FD - Financial development; FI - Financial institutions; FM - Financial markets; GDP - GDP per capita (log); FDI - Foreign direct investment, net inflows (log); TR - Trade openness (log). Standard errors in parentheses. Significance level *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: Author's own calculations.

Similar results are reported under Model (6), where instead of FD, the study uses its subindex, FM. This implies that the development of FM within the MENA region significantly negatively impacts their ESG scores. As for FI used in the model (4), the results reveal that FI is insignificant to the ESG score, although the coefficient is positive as opposed to FD and FM. This means that the development of FI within the MENA countries does not significantly contribute to the ESG scores. This may also be attributed to the MENA countries' overreliance on financial markets while neglecting the importance of financial institutions, which play a significant role in economic development, including ESG scores, as highlighted in the introduction.

3.3. Financial Development and ESG Performance: Dynamic Models

The study employs the GMM method to address the endogeneity issue with variables and provide dynamic analysis. Table 4 provides system GMM estimations for the sample countries using FD, FI, and FM as the main independent variables in models (1), (2), and (3), respectively. After running the models, numerous post-estimation specification tests ensue. These tests are reported at the bottom of the tables. Specifically, we reject the null hypothesis of the non-existence of first-order serial correlation (AR1), but we do not reject the null hypothesis of the non-existence of the second-order serial correlation in the first-differenced errors (AR2). This situation applies to all the estimations conducted. Both conditions must be satisfied to ensure the accuracy of the GMM estimates. Additionally, the Sargan tests confirm no correlation between the instruments and the error term. Consequently, we can deduce that the models fit the GMM estimates and validate the instruments.

The regression results using the GMM estimator align with the previous results we reported using the POLS and FE. The FD and FM coefficients are negative and significant, indicating that they have a negative impact on ESG scores in the MENA countries. Again, these results are in contrast to those by Ng et al. (2020), but partially in line with those by Adams and Klobodu (2018). In all scenarios considered, there is a strong degree of persistence. Specifically, when we analyze the impact of ESG scores from the previous period on our model, we observe that the estimated coefficients remain consistently high and statistically significant, with a value of at least 0.73. This indicates that the past ESG scores reinforce

further ESG performance within the sample countries, suggesting that nations' previous ESG ratings encourage them to continue doing well in this area. The results for our control variables remain the same as in previous estimations.

All in all, this study's results indicate the existence of the finance-ESG relationship, confirming H₁. However, H₂ is rejected as this relationship is negative. Finally, H₃ is partially supported, as FM is found to be significant and negative, while FI is insignificant. Similar results are reported by earlier studies such as those by Al-Mulali, Ozturk, et al. (2015), Adams and Klobodu (2018), Ganda (2019), and Håkansson and Salu (2021). Nevertheless, the opposite results were reported by Al-Mulali et al. (2015) and Ng et al. (2020). All this shows that the impact of FD on ESG scores is far from being settled, as the results from the existing literature are inconclusive.

Table 4: Dynamic Models Estimation Results - System GMM

	System GMM (1)	System GMM (2)	System GMM (3)
ESG Index _{t-1}	0.731***	0.827***	0.762***
	[0.264]	[0.163]	[0.273]
Financial Development	-0.416*		
	[0.224]		
Financial Institutions		0.492	
		[0.534]	
Financial Markets			-0.371**
			[0.178]
GDP per capita (log)	0.536*	-0.290	0.688**
	[0.322]	[0.341]	[0.329]
Trade (% of GDP)	-0.023**	-0.030*	-0.024
	[0.010]	[0.017]	[0.015]
FDI, net inflows (% of GDP)	0.020	-0.095	0.011
	[0.061]	[0.077]	[0.054]
Constant	0.525	1.077	0.141
	[1.161]	[0.663]	[1.406]
Year Dummy	YES	YES	YES
No. of observations	134	134	134
No. of countries	17	17	17
Arellano-Bond: AR(1)	0.033	0.004	0.023
Arellano-Bond: AR(2)	0.913	0.820	0.866
Sargan test (p-val)	0.878	0.875	0.926

Note: System GMM regressions. FD - Financial development; FI - Financial institutions; FM - Financial markets; GDP - GDP per capita (log); FDI - Foreign direct investment, net inflows (log); TR - Trade openness (log). Standard errors in parentheses. Significance level *** p<0.01, ** p<0.05, * p<0.10.

Source: Author's own calculations.

4. Concluding Remarks

The primary objective of this study was to investigate how FD in 17 countries in the MENA from 2012 to 2020 impacted their ESG performance. The research utilizes various financial development indices, including overall FD, FI, and FM, to assess their effects on ESG scores. Additionally, the study explores other factors such as GDP, FDI inflows, and TO. The aim of this investigation was to fill a gap in the existing research concerning the relationship between FD and ESG performance in the MENA region.

To achieve this goal, the study utilizes both static and dynamic models. The findings from both model types reveal that FD overall, and FM specifically, have a negative impact on ESG scores in the MENA countries. However, FI do not significantly contribute to these ESG scores.

4.1. Policy Recommendations

The study's findings suggest that financial development has an adverse effect on the ESG scores in the MENA region, which implies policymakers in the region should be aware of the potential negative impact that financial development may have on the ESG performance of the countries. It is, therefore, important for policymakers to formulate policies that promote sustainable financing and ESG practices while ensuring that financial development does not negatively impact society or the environment. Policymakers can introduce several measures that promote sustainable finance and ESG practices while ensuring financial development based on the policy implications of the study.

In MENA countries, policymakers should acknowledge the detrimental impact of financial development on ESG performance. The government can do this by implementing policies and regulations that encourage companies to take ESG considerations into account in their decision-making processes. A few examples of this could include mandating ESG metrics reporting and incentivizing sustainable investment. When making investment decisions in MENA countries, investors should be mindful of the potential negative impact of financial development on ESG performance. Investors should consider ESG metrics when assessing their long-term sustainability and engage with them to improve it.

4.2. Research Limitations

As with any research, this study is faced with several limitations. First, the data used for the study is limited due to availability, and several are missing. Having a complete dataset may provide additional support to our analysis. Second, using different variables may lead to different results. Hence, to confirm our findings, further robust tests might be necessary to make sure that the findings are reliable. This could be achieved by using different measures of financial development and adding additional control variables. Third, our results and those of related studies relied primarily on POLS, FE, and GMM methods. Previous studies, however, indicate that different methods may produce different results. As such, additional alternative estimation techniques may be used to support our findings further. Finally, in order to gain a deeper understanding of the relationship between financial development and ESG performance, further research is necessary. The authors could examine how financial development policies and initiatives affect ESG performance and how ESG performance affects financial development.

In short, the study provides important insights into the relationship between financial development and ESG performance in MENA countries. It highlights the need for further research to understand this relationship better.

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