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Original Article

Financial Integration and Economic Growth: Empirical Insights from the MENA Countries

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Abstract *- This article examines the effects that financial integration induces on the economic growth of MENA countries in the presence of a set of control variables. To analyse the factors that are likely to significantly affect the economic growth of MENA countries, the bivariate and multivariate methods are used over a period spanning from 1995 to 2021. This study reveals that the financial integration induces a positive and significant effect on the economic growth of this sample of countries; trade openness and investment significantly contribute to economic growth, while inflation and financial instability show a significant and negative effect on the economic growth. These findings advocate for the implementation of suitable financial and economic regulations in the MENA countries and indicate that these factors should be prioritised in the formulation of economic strategies. This study is an attempt to contribute to enriching the empirical literature that examines the central role of financial integration in economic growth in developing countries.*

Keywords *- Financial Integration, Economic Growth, MENA, Bivariate Analysis, Multivariate Analysis.*

1. Introduction

The standard economic theory confirms that international financial integration has positive effects for all countries. Financial Integration (FI) is a growing field that focuses on the development of information and communication technologies. Financial integration has been the focus of all societies' interest because of its potential gains in economic growth, macroeconomic stability, and the sharing of risks related to international consumption (Donadelli et al., 2024).

The international financial market integration is a dynamic process that evolves throughout time in response to economic, financial, and socio-political advances. It is a movement that aims for more sophisticated international financial liberalisation and flexible capital mobility across borders. This capital liberalisation has become a goal pursued by all nations to benefit from the advancements provided by the global economy, thanks to the support of widespread globalisation and constant innovation.

Financial globalisation is defined by Arestis & Basu (2004): "It is a process of integrating different capital markets and opening up all national markets internationally to achieve a single global capital market." Indeed, through its financial flow (Foreign Direct Investment (FDI), purchases of foreign securities, and very short-term investments in a foreign financial centre), it can affect economic growth either positively or negatively. These effects have been the subject of multiple debates and divergent theories. However, while this causal relationship between financial integration and economic growth is not new, it is evolving due to the ongoing globalisation of economic and financial systems.

Developing nations are compelled to enact suitable reforms and modified strategies to free their capital movements and update their financial systems in response to the dynamic and accelerated movement of financial integration that defines the current global scene. Moreover, those who want to profit from the global economy on the one hand and financial globalisation on the other. In fact, macroeconomic stability is regarded as an essential condition for both the global market and the process of regional financial integration. According to Acemoglu et al. (2014) and Rossi (2020), human capital development is crucial to achieving macroeconomic stability and financial system transparency.

Financial integration in the Middle East and North Africa (MENA) region has grown significantly during the era of globalisation. This integration is an important subject of analysis for the economies of these countries. Given the diversity of characteristics in this region, including oil-rich countries and those with limited resources, it nonetheless constitutes a specific, unequivocal case study for exploring the relationship between financial integration and economic growth.

The financial sectors of MENA countries have been steadily developing over the years to stimulate economic growth and financial development. However, the financial integration process has not yielded significant results. This is due to the events that have affected the region in recent decades, both political and economic, in addition to COVID-19, not to mention regulations and the varying levels of market development.

By analysing empirical data from various economies in the MENA region, this research aims to shed light on the complex relationship between financial integration and economic growth in this strategic region. The Middle East and North Africa region is characterised by a mix of different levels of statehood: oil-rich states and states with limited resources, in addition to the recent political and economic events that have swept the region. This study attempts to evaluate the effect of financial integration on the economic growth of the MENA zone. To put it another way, this study focuses on how financial integration affected the MENA region's economic growth between 1995 and 2021. The following primary question encapsulates the issue to be investigated in this article: What effect does financial integration have on MENA countries' economic growth? This issue raises a few questions, such as what elements have had a significant impact on this process. What rules should be adhered to make this integration easier?

To answer, the paper is structured into four sections, the first of which will present the details and reviews of the abundant literature on this subject. The second section will focus on the state of the financial systems of the MENA through some analyses of specific indicators. The third section will be devoted to the empirical part, where the bivariate and multivariate methods will be adopted to analyse the effects of the indicators of financial integration alongside the control variables used in the regression model chosen for our sample. The final section is devoted to the conclusion, recommendations, and future proposals.

Financial integration, which refers to the increasing interconnectedness of financial markets across countries, can have both positive and negative effects on economic growth, depending on various factors such as institutional quality, the level of economic development, and the specific characteristics of financial flows. This answer synthesises the findings from the provided papers to stipulate a comprehensive understanding of the effects of financial integration on the economic growth of the selected countries in the Middle East and North Africa.

2. Literature Review

In both theoretical and empirical literature, the topic of financial integration has been thoroughly discussed, with a particular focus on the connection between financial integration and economic growth. A body of literature has looked at these phenomena from several perspectives. Some contributions have concentrated on the theoretical underpinnings of imperfect capital mobility. In contrast, others have looked at the durability of deviations from the law of one price to gauge the level of market segmentation. Other research on the risk of cross-border investments has highlighted the increasing significance of international financial adjustment as a source of diversity rather than a barrier to the efficacy of capital mobility. (Giofré & Sokolenko, 2022; Gossé & Jehle, 2024; Petry, 2021).

After the Bretton Woods system collapsed in the early 1970s, there was a recent phase of globalisation during which financial integration recovered (Bastidon et al., 2019). Since then, there has been a deluge of new issues cross-listed on foreign shares in major financial centres.

Consequently, the topic of financial integration has been the focus of several discussions in theoretical and empirical studies, with one of their main goals being to examine the relationship between financial integration and economic growth. Financial globalisation has a favourable impact on economic circumstances and growth indicators through its financial flows, as several studies over the years have demonstrated (Tezega, 2022; Qayyum et al., 2025; Elfaki & Ahmed, 2024; Olunuga, 2022). Note that this is the recent research mentioned for the updating, but the earlier research also examined the theme (Levine, 2001; Schmukler, 2004; Edison et al., 2002).

Controversially, other investigations demonstrated the adverse and perverse effects that contribute to recurrent instability, which in turn is the cause of financial crises. This section of the literature review focuses on the differences in hypotheses and findings. Some theoretical models have been able to draw the conclusion that international financial integration positively impacts countries' economic growth, which in turn has a beneficial impact on the financial sector's development and economic growth.

Financial integration derived its roots and foundations from the seminal theoretical work of McKinnon and Shaw (1973) in the 1970s. Financial integration, according to the hypothesis, boosts competitiveness, speeds up the availability of loanable funds, and facilitates the free flow of capital. Positive effects on financial conditions and the process of allocating resources optimally have been demonstrated as a result.

Mackinnon and Shaw (1973) promoted the removal of obstacles that prevent the financial system from operating correctly, considering these growth-promoting outcomes. In this situation, the strategy was known as financial repression. Later, King and Levine (1993) were the first to examine the relationship between financial development and economic growth.

Examining the studies of Klein and Olivei (2008), they have demonstrated how the expansion of the financial system's operations leads to the acceleration of economic growth. These authors contend that the discipline impact of capital account liberalisation can spur economic growth, but only if governments are strengthened through the implementation of the most stringent macroeconomic policies.

According to Edison et al. (2002), financial integration fosters economic growth by improving risk sharing, investor portfolio diversification, and capital allocation.

Similarly, studies by Kose et al. [2006, 2009] have shown that international financial integration represents an important catalyst for several indirect benefits, also called "Potential Collateral Benefits", as well as other elements such as the development of the domestic financial system, the improvement of institutional quality, and the discipline of domestic macroeconomic policies.

More recently, He (2011) conducted an empirical study that focuses on the relationship between financial liberalisation and the development of human capital through knowledge accumulation. He was guided by the foundations of the new ideological current of the knowledge economy initiated by Romer (1990) and developed by Jones (1995).

De Nicolò and Juvenal (2014) established the empirical linkage between regional financial integration and economic growth. They find that regional financial integration via the stock market boosts GDP per capita by 0.96% in a sample of advanced and emerging nations. These authors discovered that financial integration is conditioned by the rate of economic expansion and the low likelihood of an actual systemic danger occurring.

Nevertheless, alternative theories have exposed the drawbacks of financial integration, highlighted the controversy, and broadened the range of established outcomes. These studies have shown that the two processes are negatively correlated; as a result, the liberalisation of the capital account has no discernible impact on economic growth. Ranciere, Tornell, and Westermann (2006) carried out an empirical study in which they demonstrated the various banking crises using a variety of indicators. They include the population growth rate, the economy's growth rate, public spending, inflation, the real exchange rate, and the economy's openness rate.

According to studies of Devereux and Yu (2020), Nguyen et al. 2022), and Giraldo et al. 2024), while global financial integration might boost the economy, it also increases the risk of financial contagion, which occurs when a crisis in one country spreads to another. This interconnection can result in sudden and devastating crises, which are frequently preceded by capital flight, calling into question the concept that financial integration always leads to long-term progress. Integrating financial markets raises global leverage and the possibility of a crisis, making economies more exposed to shocks and exacerbating contagion.

Moving forward in time and browsing through recent studies that are interested in the case of the MENA region, the study by Mahfoudh (2018) examined the nexus between institutional quality and financial development in MENA countries.

He emphasises the importance of institutional quality in the finance-growth nexus. Their findings demonstrate that financial development contributes positively to growth, but this contribution is dependent on the stability of the financial system. This study notes that the effect of financial development on growth depends on the structural and cyclical specificities of each country.

Using panel data models and 3-Panel Feasible Generalised Least Squares models, Kadri et al. 2024 investigate the relationship between the growth of the financial sector and personal economic well-being in the MENA region from 2005 to 2022. The findings suggest a significant influence of financial fluctuations on individual economic well-being. They stress how crucial it is to support the growth of the financial sector to attain sustainable economic growth and raise regional and individual economic well-being.

Emara and El Said (2021) have studied the relationships between financial development and growth in MENA countries. Their core findings present a positive and statistically significant impact of financial development on GDP per capita income growth. Then they demonstrate that private sector participation and financial inclusion have a significant role in promoting economic growth in the region by using a GMM method to analyse this linkage.

Concerning the threshold effects of financial integration (Chen & Kim, 2023; Chroufa & Chtourou, 2023), carry out a comparative study between the developing, emerging, and developed economies. Their results show that those effects depend on the level of economic and financial development, the type of financial flow, and the direction of flows. From their comparison, they discovered that developed and slowly developing economies are likely to benefit from capital outflows for higher investment incomes, whereas emerging economies with growth rates higher than 3.4-5.7 percent can successfully take advantage of financial integration and resulting capital inflows.

In a similar vein, Caporale et al. (2025) use the GMM approach to analyse the European case and show that there

are nonlinearities and that the effects of financial integration on economic growth vary depending on several factors, such as initial income, trade openness, institutional quality, political and economic uncertainty, and the level of financial development. Meniago et al. (2025) use the Fully Modified Ordinary Least Squares technique to show that financial development and economic growth are positively correlated in the African financial community. They then highlight the critical role that institutional quality plays in the 13 countries included in this model. To boost economic growth, they recommend expanding financial services and improving financial infrastructure in these nations.

Sedighi (2024) highlights that financial development is a crucial factor for economic progress in MENA countries. Although it does not explicitly address financial integration, it suggests that globalisation can enhance financial development, thereby boosting economic growth. Therefore, the effects of financial integration can be considered positive, as it likely contributes to financial development and ultimately economic growth in the region.

Almanaseer (2023) uses Ordinary Least Squares (OLS) and Autoregressive-Distributed Lag (ARDL) regression to examine the effects of financial liberalisation and integration. The author of this study looks at the relationship between financial integration and financial stability.

He found that financial integrity has a positive effect on financial stability in many countries and that fiscal policy is crucial in lowering the risk of a crisis spreading and boosting the advantages of financial integration to achieve financial stability.

Choosing seven West African countries, Barro & Bassolet (2023) studied the impact of global financial integration on economics. The same theme was explored in the study of Gizaw et al. 2024 taking the sample of the African and Asian emerging countries.

Özmen and Taşdemir (2024) demonstrate in their analytics study that in the MENA countries, international financial integration has both positive and negative effects, and the potential risks may outweigh the benefits if it is not managed correctly. They recommend that these countries should place greater emphasis on regional financial integration and strengthen regional ties to cope with global financial shocks while building more resilient financial markets.

Chehayeb & Thaher (2024) use the ARDL regression model for 13 countries from the MENA region during 2004-2020. They declare that the existing studies, which use several indicators of financial inclusion, present contradictory results. Then, they demonstrate positive effects on economic growth from financial inclusion.

During 1990-2023, Hanoun & Taher (2025) chose 12 countries from the MENA region to demonstrate a direct relationship between economic growth and the financial institutional development used as a primary dependent variable, suggesting that the development of the financial institution is a crucial step for the development of the region.

Moreover, these effects remain controversial in the academic sphere, as the empirical studies carried out in recent years tend to show in favour of the succession of financial crises that have destabilised many economies. This empirical study is situated within the context of this debate on the advantages and risks of financial integration. Indeed, the fundamental question is to determine whether financial integration, or conversely, irregularities (instability) in the financial system, are beneficial to the economic growth of countries in the MENA region.

Therefore, the relationships between financial integration and economic growth are ambiguous because the effects are linked to a broad and numerous factors, such as the types of financial flows, the degree of openness, the flow of FDI, the economic development, the financial development, the economic stability, the economic development status, and other factors.

To try to add to this literature, the sample of MENA countries is chosen because this region offers a distinctive setting with a range of economic structures, geopolitical influences, and degrees of financial growth and integration. By examining these nations, it is an attempt to clarify the subtleties of the relationship between financial integration and economic success, offering information that might guide developmental plans and policy choices in emerging economies.

3. Stylised Facts

To clarify the state of the countries in the region of MENA, the various selected indicators are provided in the form of graphs. Several factors and indicators were analysed to summarise the current situation in the countries of the MENA region. The first graph illustrates the evolution of the region's real GDP over the period studied. It shows a dramatic drop in GDP rates and negative values, similar to the global experience after the COVID-19 crisis.

The sharp drop in GDP around 2020 indicates the impact of external factors, such as global economic downturns or crises (the COVID-19 pandemic), showing that several countries experienced economic contractions. During this period, there was a significant decrease in real GDP numbers, resulting in negative values. The coronavirus pandemic has negatively affected the growth rates of countries worldwide. Compared to the growth rates of developed countries, the figure shows a significant decline. These rates are registering negative values.

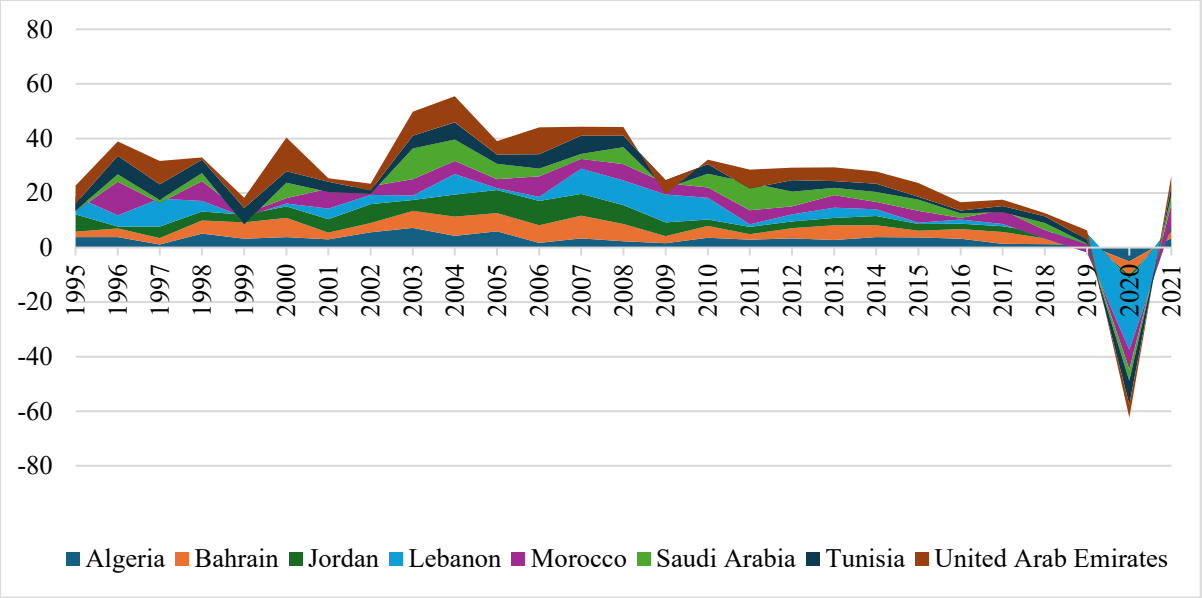

Fig. 1 Evolution of Real GDP in MENA Countries During 1995-2021

Source: International Monetary Fund

The second graph depicts the progression of governmental debt in the selected countries, thus justifying the need to undertake adequate measures at the level of the debt system. Jordan, Egypt, and Lebanon have recorded increases in public debt. Conversely, Tunisia and Syria have relatively lower and more stable debt levels. The debt percentages rose following the coronavirus pandemic, as governments sought additional borrowing to support their economies. The same observations can be made for Saudi Arabia. The public debt levels of these countries reflect their economic situations. To achieve this, the area must implement the most appropriate economic and institutional reforms to cope with shocks and vulnerability.

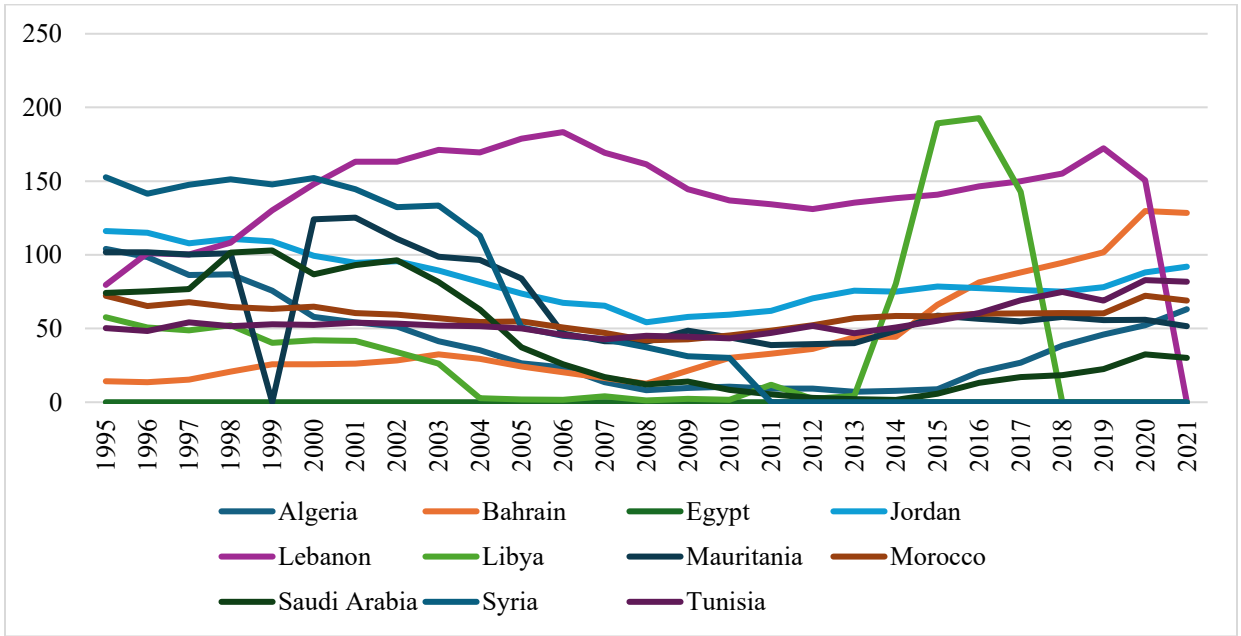

Fig. 2 Central Government Debt as a % of GDP in MENA Countries During 1995-2021

Source: International Monetary Fund

Graph 3, for its part, summarises the flow of direct investment of the countries of the region (Direct Investment in millions of $) and thus reflects timid movements lower than what is expected of the region compared to the financial resources that it possesses. The curve is showing a significant decline during the coronavirus pandemic.

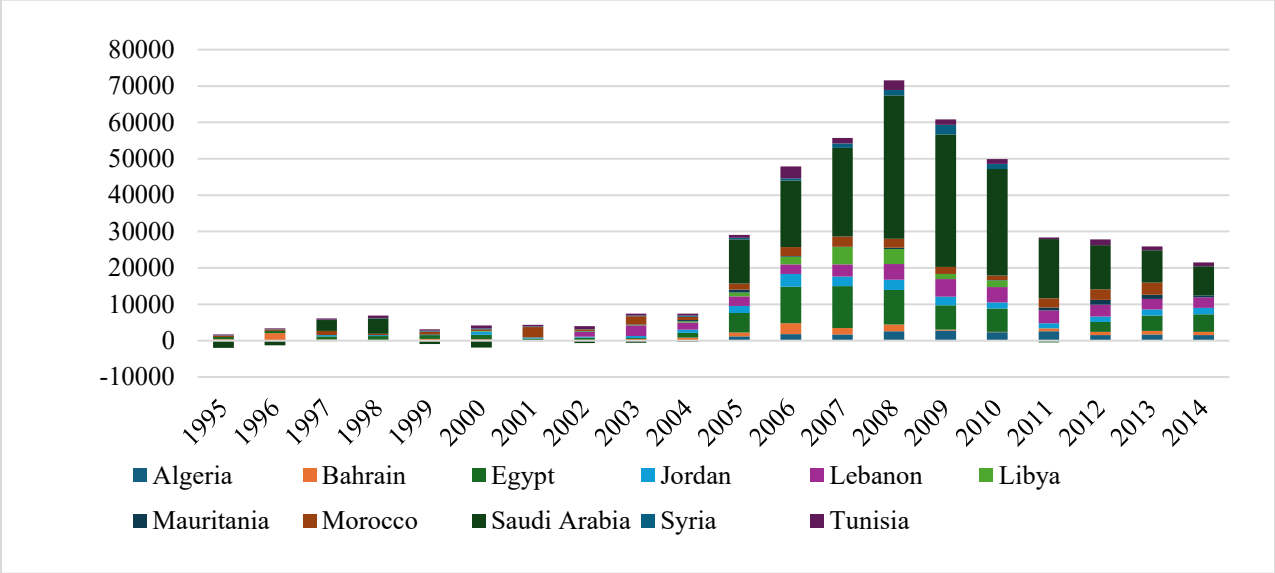

Fig. 3 Direct investment from MENA countries during 1995-2014

Source: International Monetary Fund

Graph 4 shows the evolution of inflation rates in the region.

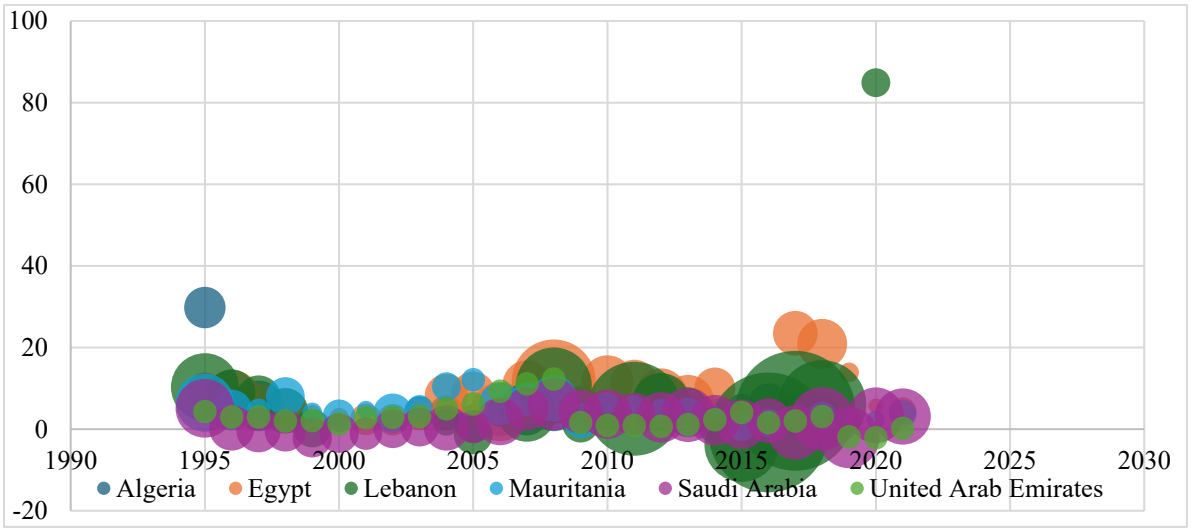

Fig. 4 Inflation Rates in MENA Countries During 1995-2021

Source: International Monetary Fund

Saudi Arabia has low inflation rates consistent with its economic policies, especially compared to Lebanon and Egypt. These two latest countries could reflect more volatility, particularly in the later years, indicating economic challenges or instability. Algeria and Mauritania have shown relatively stable inflation rates over time, with few significant spikes or drops.

The trend extending towards 2030 indicates how economists or analysts predict inflation might evolve, possibly suggesting a cautious outlook for certain nations.

Most of the indicators illustrated below experienced a significant decline during the coronavirus pandemic. This pandemic posed unprecedented challenges to economies worldwide, and the MENA region was no exception. This crisis highlighted the importance of financial integration as a tool for resilience and recovery Zonon et al. 2025.

The financial markets in this region have not been spared from the sharp volatility and downturns Elbach et al., 2024 The world has experienced a profound decline in demand for oil and other exports, essential to many

economies in the region. However, the integration of financial markets has mitigated these shocks.

The coronavirus pandemic necessitated urgent regional collaboration to control the situation. Efforts to enhance financial integration, such as initiatives by the Arab Monetary Fund and financial regulations, aimed to promote standard financial solutions and stabilise economies.

The following section reinforces the observations presented in the graph. The empirical analysis provides insight into the significant role that financial integration plays in the development of economies in the MENA region.

4. Methodology

4.1. Presentation of Sample

The sample comprises developing nations within the MENA region. The main sample comprises 11 countries. The selected sample includes six African countries and five Asian countries spanning the years 1995–2021. Due to a shortage of data availability, the term is extended until 2021 to collect the most data for all nations in our sample. This allowed us to keep 297 observations. The data used in our analysis were gathered from the World Bank's [World Bank, 2024] and International Monetary Fund's [IMF, 2024] databases.

The international financial integration indicator, the financial instability variable, and inflation for each country are taken from the IMF database. Data on macroeconomic aggregates (economic growth rate, trade openness index, population growth rate, school enrolment rate, and governance index) are obtained from the World Bank database.

4.2. Definition of Variables

The GDP growth rate, which stands for the gross domestic product, is the dependent variable that we first present. Recall that GDP is the total of all resident producers' gross value added in an economy, plus all product taxes, less any subsidies that are not factored into product value. It is computed without considering the depreciation of produced items or the degradation or loss of value of natural resources [World Bank 2022]. The constant 2015 US dollar serves as the basis for the aggregate data.

Second, the remaining basket of variables is presented. Furthermore, our regression equation includes variables of interest, which are markers of international financial integration and financial progress. FI is a financial integration measure calculated by summing the inflows and outflows of foreign direct investment and portfolio investment and dividing by GDP. The control variables of our model are described as follows: TO is an indicator of trade openness calculated as the ratio of imports and exports to GDP.

Pop: The population growth rate. Indeed, when the population increases, spending on demographic investments increases, and the level of savings decreases, as do the conditions for the accumulation of capital and therefore economic growth.

Infl: indicates inflation is generally measured by considering household final consumption prices. Scol: School enrolment rate is often a growth factor and a catalyst for economic development. Gov: The variable supposed to represent governance is the electoral democracy index (LIED), which is a variable between 0 and 6, with 0 reflecting the lowest level of democracy and 6 reflecting the highest level of electoral democracy. This variable comes from the Lexical Index of Electoral Democracy(LIED).

First: To determine the indicators of financial instability, the indicators commonly used in empirical work, namely the ratio of credits granted by deposit banks to GDP represented by (DF1) and the ratio of assets of commercial banks and other financial institutions/GDP represented by (DF2). Thus, financial instability is measured from the standard deviation of the average growth rate of the financial development variable, which is measured by M3/GDP. Indeed, Table 1 summarises the data used in our model.

Table 1. Summary Table of Variables

Variable	Definition	Notation	Source
GDP growth rate.	The sum of gross value added by all resident producers in an economy, plus any product taxes, minus any subsidies not included in the value of the products	**GDP**	World Bank Indicators [World Bank 2023]
Financial integration indicator	The sum of inflows and outflows of foreign direct investment and portfolio investment divided by GDP.	**FI**	(IMF, 2024)
Trade openness indicator	Measured by the ratio of the sum of imports and exports to GDP	**TO**	World Bank Indicators [World Bank 2023]
Population growth	Measures the population growth rate. Indeed,	**Pop**	World Bank Indicators [World

rate	when the population increases, spending on demographic investments increases, the level of savings decreases, as do the conditions for the accumulation of capital and therefore economic growth		Bank 2023]
Inflation	Measured by considering household final consumption prices.	**Infl**	(IMF, 2024)
Scolarisation	School enrollment rate is often a growth factor and a catalyst for economic development.	**Scol**	World Bank Indicators [World Bank 2023]
Governance index	The Electoral Democracy Index (EDI) is a variable ranging from 0 to 6, with 0 reflecting the lowest level of democracy and 6 reflecting the highest level of electoral democracy.	**Gov**	Lexical Index of Electoral Democracy
Financial instability indicator	The standard deviation of the average growth rate of the financial development variable, which is measured by M3/GDP	**FInst**	(IMF, 2024)

4.3. Model Specification

Based on the general theory of economic growth, which emphasises research on the connection between financial integration and economic growth, and specifically the empirical works of Levine (2001), between 1995 and 2021:

$$GDP_{it} = a_0 + a_1 FI_{it} + a_2 TO_{it} + a_3 Pop_{it} + a_4 Infl_{it} + a_5 Schol_{it} + a_6 Gov_{it} + a_7 FInst_{it} + \varepsilon_{it} \quad (1)$$

4.4. Descriptive Analysis

Table 2 presents the observations during the study period 1995-2021.

Table 2. Descriptive Statistics of the Variables

Modality	Number of observations	Percentage
Africa	162	54.54
Asia	135	45.46
Total	297	100

According to Table 2, 54.54% of the observations concern the African continent, and 45.46% concern Asia. The analysis of descriptive statistics shows that the economic growth rate in the group of African countries is higher than that of Asia. The average for the overall sample is 0.41, that of Africa is 1.009, and that of Asia is negative by -0.30. This gap may be due to the realities of Syria during the study period.

The other indicators are higher in the group of Asian countries than in Africa (characteristic of the sample). Africa remains the least vulnerable to financial instability, with 0.02 as an index of financial integration, while Asia has 0.06. Also, for financial instability, Africa is less weak, with an average of 71.78, and 75 is the average for Asian countries. Economic growth is stronger in Africa and weaker in other countries, which confirms that political and economic crises have perverse effects on economic growth. These descriptions are summarised in Table 3.

Table 3. Descriptive Statistics: Overall Sample

	Obs	Average	Max	Min	S D
GDP	297	0.413	5.566	-62.378	14.99
FI	297	0.043	0.096	-0.427	0.687
TO	297	68.391	32.735	9.635	165.28
Pop	297	2.387	2.225	-4.533	15.177
Infl	297	4.704	6.098	-9.797	36.702
Schol	297	1044.66	8084.946	70.086	70124
Gov	297	43.67	20.359	10	90
FInst	297	73.381	38.99981	16.89953	336.959

Table 4. Descriptive Statistics: Africa

	Obs	Average	Max	Min	S D
GDP	162	1.009	6.173	-62.378	14.997
FI	162	0.028	0.048	-0.111	0.277
TO	162	58.745	19.892	18.825	111.473
Pop	162	1.686	0.617	0.548	2.954

Infl	162	5.025	5.039	-9.797	29.779
Schol	162	103.073	10.307	70.086	119.539
Gov	162	37.777	16.456	10	70
FInst	162	71.817	47.304	16.899	336.959

Table 5. Descriptive Statistics: Asia

	Obs	Average	Max	Min	S D
GDP	135	-0.3	4.658	-24.02	8.015
FI	135	0.061	0.13	-0.42	0.687
TO	135	79.966	40.54	9.63	165.28
Pop	135	3.227	3.029	-4.54	15.17
Infl	135	4.318	7.167	-3.84	36.702
Schol	135	2174.565	11917.7	70.54	70124
Gov	135	50.74	22.31	10	90
FInst	135	75.256	25.782	32.191	138.881

5. Data Analysis

5.1. Bivariate Analysis

After presenting the results of the descriptive analysis and having an idea about the main characteristics of our sample, it is essential to test the normality of the distribution of the variables to verify the correlation between the variables to be explained and the explanatory variables.

Using the Shapiro-Wilk normality test, the appropriate test, either a parametric test or a non-parametric test, is selected for each type of variable.

5.1.1. Normality Test

Table 6 shows the findings of the Shapiro-Wilk normality test. The table shows that all factors are highly significant at the 1% level (p<1%). This means that the variables GDP, FI, TO, Pop, Infl, Schol, Gov, and FInst have a normal distribution. In this situation, the non-parametric Spearman test is used to determine the correlation between the independent and explanatory variables, as well as to verify the bivariate association.

Table 6. Normality Test for the Overall Sample (Shapiro and Wilk)

Variables	Global Sample			
	W	V	Z	Prob
GDP	0.65	73.752	10.090	0.00000
FI	0.662	71.186	10.007	0.00000
TO	0.961	8.191	4.934	0.00000
Pop	0.767	49.106	9.136	0.00000
Infl	0.752	52.213	9.280	0.00000
Schol	0.088	192.509	12.341	0.00000
Gov	0.985	3.147	2.690	0.00357
FInst	0.815	38.865	8.587	0.00000

5.1.2. Bivariate Relationship between Variables

Table 7 presents the results of the synthesized Spearman test.

Tableau 7. Spearman Test

	GDP	FI	TO	Pop	Infl	Schol	Gov	FInst
GDP	1							
FI	0.08	1						
TO	-0.09	0.35*	1					
Pop	-0.12*	0.15*	0.36*	1				
Infl	-0.20*	-0.05	-0.20*	-0.20*	1			
Schol	0.05	-0.00	-0.13*	-0.12*	0.21*	1		
Gov	0.04	0.26*	0.45*	0.28*	-0.26*	-0.14*	1	
FInst	-0.14*	-0.07	0.11	-0.12*	0.10	-0.03	0.12*	1

*: indicates coefficients that are statistically significant at a 5% level.

Table 7 provides the correlation of the dependent variable with the rest of the explanatory variables. The value detected from the Spearman test demonstrates a positive relation of GDP with FI (Financial Integration), but it is not significant. Then, the relation between the GDP and TO (Trade Openness) is negative with a coefficient = -0.09, and it is also not significant. The results of the Spearman test indicate an indirect relationship between GDP and the variable Pop (population), which is significant at the 5% level. Therefore, population growth could lead to a low rate of GDP growth. Then the relationship between GDP and inflation is negative with a coefficient of -0.20 and significant at 5%. A rise in inflation leads to a fall in GDP, delaying economic dynamics and slowing economic growth.

This table depicts a positive coefficient between GDP and Schol, which equals 0.05, and it is not significant. The same observation is made for the relation between GDP and government. However, the relationship between GDP and FInst is negative with a coefficient equal to -0.14, and it is

significant at 5%. Financial instability plays a major role in economic growth. Furthermore, financial integration followed by financial stability leads to economic development and subsequently to an increase in GDP.

The multicollinearity test (VIF test) (Variance Inflation Factor), which determines how much a coefficient's variance is enhanced because of a linear relationship with other predictors, comes after the Spearman test. VIF evaluates if elements relate to one another (Multicollinearity) during regression analysis, which could affect other factors and lower the model's reliability. If a VIF is greater than 10, there is high multicollinearity: the variation will appear greater, and the factor will appear more influential than it is. If VIF is closer to 1, then the model is much more robust, because the factors are not influenced by correlation with other factors. In this analysis, the VIF values are around 1, indicating the absence of multicollinearity. Table 8 provides the results of the multicollinearity test.

Table 8. Multicollinearity Test (Vif test)

Variables	VIF	1/VIF
TO	1.50	0.67
Gov	1.38	0.73
Pop	1.23	0.82
FI	1.19	0.84
Infl	1.16	0.86
FInst	1.10	0.91
Schol	1.07	0.94
Mean VIF	1.23	

The average VIF value depicted for all variables is 1.23, which is closer to 1. So, the chosen model is robust and proves the absence of multicollinearity. Generally, a VIF greater than 10 can indicate collinearity problems. In this case, all VIFs are well below 10, which is encouraging for the accuracy of the regression model estimates. Not all variables exhibit significant multicollinearity, which strengthens the results and better explains the effects of financial integration on economic growth. This justifies the reliability of the analysed model.

5.2. Multivariate Analysis

Multivariate analysis is a powerful tool that has proven its effectiveness in analysing complex data and allows for the detection of relationships between multiple variables. This analysis appears suitable for many fields where researchers and analysts can manage relevant information. After the descriptive statistics of the variables are presented below, the following section will verify the reliability of the model using appropriate tests of homogeneity, heteroscedasticity, and Hausman.

5.2.1. Homogeneity Test

The presence of individual-specific effects in the study sample is confirmed by the homogeneity test. The following step consists of the fixed and random specific effects models if this test reveals the existence of individual-specific effects. Because the choice between fixed and random effects can have a significant impact on the analysis's results, it is crucial to analyse the implications carefully. Fisher's homogeneity test results are summarised in Table 9.

Table 9. Breusch-Pagan test

Dependante Variable	Regression
Chibar 2	344.94***
(Prob.)	(0.00)

****significant at the 1% level.*

The analysis of Fisher's exact test results (Table 9) reveals no specific individual effects in any regression. For each regression, these results are significant at the 1% level. Consequently, the variables studied do not exert distinct effects across contexts, indicating strong consistency in the data. These results confirm the validity of the inferences drawn from this dataset.

5.2.2. Hausman test

Table 10 displays the Hausman test results. The distribution of the Hausman test statistic, χ^2 (6) = 29.01, is χ^2. In this instance, the number of coefficients tested is indicated by the model's seven explanatory variables. The test's significance is at the 1% level, which is lower than the typical significance level of 0.05. Consequently, the null hypothesis is disproved. Put otherwise, there is a systematic difference between the coefficients of the fixed effects and random effects models.

In our analysis, the fixed-effects model is more appropriate than the random-effects model in this situation.

Table 10. Hausman test

Test	Test statistic	(df)	P-value (Prob > chi2)	Interpretation
Null hypothesis (H_0)	The difference in coefficients is not systematic (fixed effects and random effects models are equivalent)	-	-	-
Test statistic (chi^2)	29.01 7	0.0001		chi^2 = 29.01
P-value (Prob > chi^2)	-	-	0.0001	P-value <0.05
Decision	Rejection of H_0, the fixed effects model is preferred.			

5.2.3. Interpretations of the Results

Table 11 presents and interprets the estimation results.

Table 11. Estimation Results

	Coefficient	T-student	Prob
FI	6.35	1.83	0.068*
TO	0.021	1.83	0.067*
Pop	-0.41	-2.69	0.007***
Infl	-0.21	-4.03	0.00***
Schol	0.004	1.25	0.211
Gov	0.019	1.10	0.271
FInst	-0.017	-2.10	0.035**
const	3.97	3.73	0.000***
Number of obs = 297 F (7, 289) = 5.18 Prob > F = 0.0000 R-squared = 0.7115 Adj R-squared = 0.705			

Notes: *, **, *** indicate statistical significance respectively at the 10%,5% and 1%.

The estimation table shows a positive relationship between financial integration and GDP, with a coefficient of 6.35, which is statistically significant at the 10% level. Thus, financial integration contributes to accelerating economic growth in the region's countries, which corresponds to the findings of Özmen. & Taşdemir (2024). These results are consistent with the work of Bong and Premaratne (2019), who demonstrated that financial integration has a positive impact on real GDP per capita at the 1% level.

Similarly, Emara and El Said (2021) focus on the importance of financial development for GDP per capita growth. They emphasise the importance of private sector participation and financial inclusion in the economic growth process.

In line with the findings of Botta et al. (2023), financial integration plays a crucial role in the economic growth of small developing countries and has a positive impact on their growth. These countries in the region will need to strengthen their financial development efforts and reforms to generate further positive economic effects.

The trade openness has a positive impact on GDP; the coefficient equals 0.021, and it is significant at the 10% level. Consistent with Tesega (2022) and Sumbal et al. (2020), this may suggest that greater market openness, while generally beneficial, has positive effects on the economy in certain contexts or with specific levels of development. Trade openness generally has a positive and significant impact on economic growth in MENA countries, primarily through increased technology transfer, innovation, and export growth.

However, the effectiveness can be enhanced by strong institutions, export diversification, and improved foreign investment. However, population has a significant negative impact on GDP. Population growth is likely to lead to a reduction in GDP. This relationship is significant at the 1% level, which strengthens the robustness of this conclusion.

Therefore, GDP is significantly impacted negatively by inflation, with a coefficient of -0.21, with a significance of 1%. This implies that economic growth is negatively impacted by rising inflation. This statistically sound result demonstrates the importance of pricing stability for a thriving economy. This conclusion is supported by the research of Sadeghi et al. (2023) and Neaime & Gaysset (2022).

Financial instability has a significant negative impact on GDP, which led to the conclusion that the financial stability of the countries considered plays a significant role in the development of their economies. Thus, financial instability must be taken into account in the economic dynamics of this region. This result supports the work of Mahfoudh (2018) and Olunuga (2022).

The level of education has no statistically significant impact on GDP. The same observation applies to governance, which also has no statistically significant impact on GDP. The lack of substantial correlation between GDP and the variables "School" (education) and "Gov" (governance) in this model could be due to other unobserved factors.

In conclusion, the variables pop, inf, and InstF have a significant and negative effect on GDP. Financial instability has a direct impact on economic growth, emphasising the necessity of financial sector stability in promoting economic growth in MENA countries. Financial integration has a favourable but marginally significant effect, implying that access to financial markets may help growth, while the data is limited. The main results are reported in Table 12.

Economic growth can be significantly boosted by the free movement of capital, improved access to markets and services in the MENA region, and the promotion of financial integration and technological innovation. However, drawbacks should not be overlooked. Therefore, finding a balance with sustainable economic growth must be a priority in the region. Indeed, these countries must implement appropriate economic policies. Each policy must be carefully tailored to the specific needs and conditions of each country in the region to maximize its effectiveness.

Table 12. Summary of Main Results

Characteristics	Hypotheses	Results	Validation
Financial Integration (FI)	H1: Positive and significant effect of financial integration on growth	Positive, but not significant at 5%	Accepted at 10%
Trade Opening	H2: Positive and significant effect of market opening on growth	Positive, but marginally significant at 10%	Accepted at 5%
Population (Pop)	H3: Negative and significant effect of population on growth	Negative, significant at 1%	Accepted at 1%
Inflation (Infl)	H4: Negative and significant effect of inflation on growth	Negative, significant at 1%	Accepted at 1%
Level of education (Schol)	H5: Positive and significant effect of education level on growth	Not significant	Not accepted
Governance (Gov)	H6: Positive and significant effect of governance on growth	Not significant	Not accepted
Financial instability (FInst)	H7: Negative and significant effect of financial instability on growth	Negative, significant at 5%	Accepted at 5%

6. Conclusion

This study examined the seemingly complex causal link between economic growth and financial integration, accounting for diverse characteristics specific to the MENA region.

The findings reveal that financial integration positively and significantly contributes to GDP growth and, in turn, induces positive effects on these countries' economies. Then, trade openness exerts a positive effect on the GDP growth rate. The trade openness facilitates access to broader capital markets and accelerates the transfer of new technologies.

However, challenges such as high population pressure and inflation rates in some countries of the zone constitute a significant obstacle to economic growth, and appropriate reforms and strategies must be put in place to minimise the damage.

Furthermore, the lack of a significant impact from education and governance underscores a crucial area that warrants further investigation, suggesting that improvements in these areas may require more time or the implementation of specific reforms to translate into tangible economic benefits.

The policy implications derived from this analysis highlight the need for comprehensive strategies that not only foster financial integration and trade but also focus on stabilising economic conditions and addressing demographic challenges. The MENA region needs to adopt more flexible exchange rates to cope with external shocks and reduce inflationary pressures. It is also necessary to implement more appropriate measures to reduce budget deficits. Implement reforms to deepen financial markets, making them more accessible and efficient.

MENA countries can create a more favourable environment for sustainable economic growth by prioritising infrastructure investment, improving educational outcomes, and fortifying governance frameworks. With the acceleration of the technological and digitalisation era, countries in the region will need to consider investments in non-oil sectors, such as technology and renewable energy. Their objectives should be to promote the development of digital financial services to improve accessibility and reduce transaction costs.

For countries to benefit from financial integration, they must implement anti-corruption laws and encourage transparency in public spending to improve public financial governance.

Regional cooperation between these countries must include trade agreements facilitating the free flow of capital as well as specific strategies strengthening financial stability.

This study is an attempt to illustrate how financial integration and economic growth are related. It does, however, have several limitations, particularly regarding data availability, which may affect the outcomes. Nevertheless, future studies should concentrate on assessing this relationship with other factors, the advantages of financial integration, and improved financing of these countries' economies.

Given the region's distinctive features in every aspect, financial integration in the Middle East and North Africa (MENA) will continue to be an important field of study. Future research on the development of fintech for oil-rich nations that have implemented reforms to encourage the adoption of new financial technology, as well as for others with limited resources, may address this diversity.

The knowledge gained from this study provides a basis for policymakers seeking to foster resilience and prosperity as the MENA countries negotiate their distinct economic environments.

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