

# Regional and International Financial Integrations:

## The Drivers and Collateral Benefits

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# REGIONAL AND INTERNATIONAL FINANCIAL INTEGRATIONS: THE DRIVERS AND COLLATERAL BENEFITS

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## ABSTRACT

This paper investigates the drivers and collateral benefits of international (IFI) and regional financial integrations (RFI) in Middle East and North Africa economies (MENA). To this end, we first construct a quantity-based measure of RFI in the MENA. We find that IFI is mainly driven by financial development, trade openness and favorable global financial conditions. RFI, on the other hand, is mainly determined by real income per capita and trade openness. Then, we focus on whether IFI and RFI lead to collateral benefits including financial development and governance. Our results suggest that too much IFI deters whilst higher levels of RFI promote financial development. High levels of IFI and RFI both tend to be positively associated with institutional quality and governance. The empirical findings in this paper propose that MENA economies should engage in structural reforms, encompassing multilateral trade agreements, liberalization of capital accounts, eliminating barriers to regional financial integration, and enhancing the institutional environment. In this vein, policymakers may be suggested to formulate strategies with the goal of maximizing the collateral benefits of both international and regional financial integrations.

**Keywords:** International financial integration, Regional financial integration, Collateral benefits, Financial development, Governance, Middle East and North Africa Economies

**Jel Code:** F30, F40, F62, R10

## 1. Introduction

Conventional theory suggests that movement of capital from rich to poor economies provides risk-sharing, efficient capital allocation and better growth opportunities. Obstfeld (1994) remarks that growth and welfare gains from financial openness are large and permanent. This led many emerging market and developing economies in East Asia, Eastern Europe and Latin America to remove or eliminate restrictions on capital account to attract financial flows in the 1980s and 1990s (Agenor, 2003). However, the Mexican crisis in 1994, the Asian crisis in 1997, the Russian crisis in 1998, the Brazilian crisis in 1999, the Turkish crisis in 2001, and the Argentine crisis in 2001/2002 have prompted a reassessment of theoretical expectations regarding financial openness in light of empirical evidence.

Gourinchas and Jeanne (2006) finds that a non-OECD country that switches from financial autarky to perfect capital mobility tends to experience only a slight improvement in welfare. Edison et al. (2002) reports that there is no robust positive effect of capital account openness on growth. Bekaert et al. (2005) remarks that international financial openness increases growth by one or two percentage points in five years. Bonfiglioli (2008), on the other hand, finds that both *de facto* and *de jure* financial openness increase total factor productivity. The bulk of the literature including Kose et al. (2011), Broner and Ventura (2016) and Furceri et al. (2019) emphasizes the importance of “collateral” environment containing financial development and institutional quality. In this context, Kose et al. (2009) maintains that gains of international financial openness may be catalytic and indirect. Furthermore, they argue that capital account openness can promote financial development, provide discipline on macroeconomic policies, stimulate efficiency between domestic and foreign firms and encourage institutional quality and governance. These are dubbed as “collateral benefits” according to Kose et al. (2009) and expected to be larger than direct effect of financial openness.

Kose et al. (2009) remarks that openness to international financial flows can stimulate financial development. Accordingly, the presence of foreign banks allows countries to access international financial markets much easier. In addition, foreign banks can enhance regulatory and supervisory frameworks on domestic banks. Furthermore, the competition between domestic and foreign banks can enhance the quality of financial services. Klein and Olivei (2008) presents evidence that financial development is much higher in financially more open economies. The results by Caballero and Krishnamurthy (2001) and Aghion and Banerjee (2005) suggest that procyclicality of capital flows is substantially higher in economies with swallow and inefficient financial markets. Levine (2001) indicates that the liberalization of

portfolio flows and the participation of foreign banks tend to enhance liquidity of the stock market and the efficiency of the banking system, both of which contribute to better economic growth through increased productivity. According to Stulz (2005), financial openness enhances corporate governance and mitigates the cost of capital. Masten et al. (2008) indicates that openness to international financial flows tends to improve financial development by enhancing institutional quality and governance that provides stability and mitigates asymmetric information. Morck et al. (2005) reports that financial globalization appears to augment corporate governance problems by exposing domestic investors to implement better regulatory frameworks.

James (2018) and McCauley et al. (2019) remark that the recent global financial crisis leads to a substantial decline in cross-border financial asset transactions. A recent report by the IMF predicts a slowdown in growth prospects both for advanced, emerging market and developing economies (World Economic Outlook, 2023). Considering the procyclicality of capital flows (Kaminsky et al., 2004), this projection can also imply a slowdown in financial flows and international financial openness. These can prevent countries from realizing the theoretical and collateral benefits of capital account openness. In this vein, regional financial integration has emerged as a complementary subset to international financial integration.

Regional financial integration can be defined as “the process of opening up capital accounts among countries of geographical proximity, including a liberalization of cross border activities of financial institutions within the integrating area” (Frey and Volz, 2013; p.80). Eyraud et al. (2017) indicates that regional financial integration tends to enhance growth by alleviating the sensitivity to global shocks. Park and Lee (2011) suggests that geographical proximity can stimulate financial flows within the region by mitigating asymmetric information. Garcia-Herrero and Wooldridge (2007) and Eyraud et al. (2017) point that regional financial integration stimulates good practices in financial system and improvement in financial development. In this vein, Tahari et al. (2007) reports that regional financial integration in Maghreb countries enhances the depth and efficiency of financial markets.

This paper first aims to examine the determinants of openness to international and regional financial flows in Middle East and North Africa (MENA) economies. We measure openness to international financial flows with international financial integration (Lane and Milesi-Ferretti, 2018). We consider the bilateral financial investment stocks data prepared by Pagano et al. (2020) to construct a quantity-based measure of regional financial integration (RFI) in MENA. IFI is calculated as the sum of gross stocks of financial assets and liabilities (as a percent of

GDP). In a similar vein, we compute RFI as the summation of gross stocks of financial assets and liabilities (as a percent of GDP) between the MENA economies. Considering these measures, we focus on the drivers of IFI and RFI. The “collateral” benefits argument suggested by Kose et al. (2009) has led us to also investigate the indirect effects of IFI and RFI. In this vein, we examine whether the IFI and RFI affect financial development and governance in MENA.

We aim to contribute to the literature first by constructing a quantity-based measure of RFI in MENA. The literature often considers price-based measure of RFI that focuses on cross-sectional dispersion in interest rates and asset returns. Baele et al. (2004) suggests that this measure considers only listed companies in stock markets. Therefore, we focus on the quantity-based criterion of RFI to measure the actual regional financial flows. The literature often calculates regional financial integration in Asia or Europe. To the best of our knowledge, this is the first study that measures regional financial integration in MENA by using the actual financial flows within the region. This paper also contributes to the literature by empirically examining the determinants of IFI and RFI. To explain the drivers of IFI and RFI, we consider the effects of real income per capita, financial development, governance, trade openness and global financial conditions proxied with volatility and risk aversion index. Considering the potential endogeneity among the variables, we employ the system generalized method of moments (GMM) estimation method (Arellano and Bond, 1991; Arellano and Bover, 1995). We further examine whether IFI and RFI lead to collateral benefits including financial development and governance. We also include the squares of IFI and RFI into the estimated equations to tackle the potential nonlinear relationship issue. The potential endogeneity of IFI and RFI for financial development and governance is taken into account by utilizing system GMM method.

Our empirical results suggest that IFI is driven by financial development, trade openness and favorable global financial conditions. We also find that RFI is mainly determined by real income per capita and trade openness. Our findings indicate that IFI tends to increase financial development albeit the high levels of IFI diminish financial development by affecting financial market access and depth. However, high levels of RFI appear to enhance financial development by affecting financial market efficiency. High levels of IFI also diminish corruption, enhance government effectiveness and provide political stability. This also appears to be the case for RFI, although there is no significant impact on corruption.

The plan for the rest of this paper is as follows. The following section introduces the data, presents some descriptive statistics and the evolutions of international and regional financial integrations in MENA. Section 3 explains the empirical methodology and reports the estimation results. Section 3.1 focuses on the determinants of international and regional financial integrations. Section 4 investigates the collateral benefits of international and regional financial openness. Sections 4.1 and 4.2 examine, respectively, the effects of international and regional financial integrations on financial development and governance. Section 5 briefly explains the main empirical findings and provides some policy implications for MENA.

## **2. Data: Descriptive Statistics and Stylized Facts**

This paper investigates the determinants and collateral benefits of financial flows both internationally and regionally in Middle East and North Africa (MENA) economies. International financial flows are measured either by the *de facto* financial openness introduced by Lane and Milesi-Ferretti (2018) or *de jure* capital account openness proposed by Chinn and Ito (2006). Kose et al. (2009) remarks that *de jure* financial openness represents mainly restrictions on financial asset transactions which are effective on paper but often ineffective in practice. In addition, they suggest that collateral benefits of financial openness appear to be realized with *de facto* measure. All these arguments have led us to focus on *de facto* financial openness proxied with international financial integration (IFI). IFI is constructed based on the sum of gross stocks of financial assets (purchases/sales of foreign assets by domestic residents) and liabilities (purchases/sales of domestic assets by foreign residents) in portfolio equity, foreign direct investment and other investment (banking) flows as a percent of GDP. We use the External Wealth of Nations database provided by Lane and Milesi-Ferretti (2018) to calculate IFI.

The literature proposes either quantity-based or price-based criteria to measure regional financial integration (RFI). The quantity-based RFI considers bilateral financial asset transactions in a specific region. The price-based RFI, on the other hand, focuses on whether there is a convergence in asset prices or interest rates in a specific region. Baele et al. (2004) suggests that this measure considers only listed companies in stock markets. Therefore, we consider quantity-based criterion to calculate the RFI in MENA. Accordingly, RFI is defined as the sum of gross stocks of financial assets and liabilities in portfolio equity, foreign direct investment and other investment (banking) flows (as a percent of GDP) among the countries in MENA. We use the gross stocks of bilateral financial asset transactions data provided by Pagano et al. (2020) to calculate RFI. The data availability allows us to focus on 11 MENA economies

including Bahrain, Egypt, Israel, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Turkey and United Arab Emirates.

**Table 1.** Definitions and Data Sources of the Variables

<b>Variable</b>	<b>Definition</b>	<b>Data Source</b>
International Financial Integration (IFI)	Sum of gross stocks of financial assets and liabilities (% of GDP)	External Wealth of Nations Database II (Lane and Milesi-Ferretti, 2018)
Regional Financial Integration (RFI)	Sum of gross stocks of financial assets and liabilities in MENA (% of GDP)	FINFLOWS Database (Pagano et al., 2020)
Real GDP per capita (RGDPpc)	Logarithm of real income per capita	Penn World Table (Feenstra et al., 2015)
Financial Development Index (FD)	Financial development index is constructed based on the depth, access and efficiency of financial markets and institutions	Financial Development Index Database (IMF, Financial Development Index Database; Svirydzenka, 2016)
Institutional Quality and Governance (GOV)	Institutional quality and governance is constructed based on the control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, rule of law and voice and accountability	World Bank, Worldwide Governance Indicators (Kaufmann and Kraay, 2023)
Trade Openness (TRADE)	<i>De facto</i> trade globalization index is constructed based on the trade in goods and services and trade partner diversity	KOF Globalization Index (Gygli et al., 2019; Dreher, 2006)
Volatility and Risk Aversion Index (VIX)	Logarithm of VIX	Chicago Board Options Exchange

Table 1 presents the definitions and data sources of our variables of interest. Real income per capita data (RGDPpc) are taken from Penn World Table database (Feenstra et al., 2015). To represent domestic financial conditions, we use financial development index (FD) by Svirydzenka (2016) which is constructed based on the depth, access and efficiency of financial institutions and markets. The index varies between zero and one with higher values denote better domestic financial conditions. The data for institutional quality and governance (GOV) are from Worldwide Governance Indicators, World Bank. Control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, rule of law and voice and accountability are the main components of the GOV. GOV values are between -2.5 and 2.5 with higher values representing better institutional quality and governance. We

normalize the GOV to be between zero and one. Our measure of trade openness (TRADE) is the *de facto* trade globalization index constructed by Gygli et al. (2019) and Dreher (2006) based on trade in goods and services and diversity of trading partners. The index varies between one and hundred with higher values showing more trade openness. To represent the global financial conditions, we use the logarithm of volatility and risk aversion index (VIX). A decrease in VIX represents favorable global financial conditions and greater risk appetite.

**Figure 1.** International Financial Integration

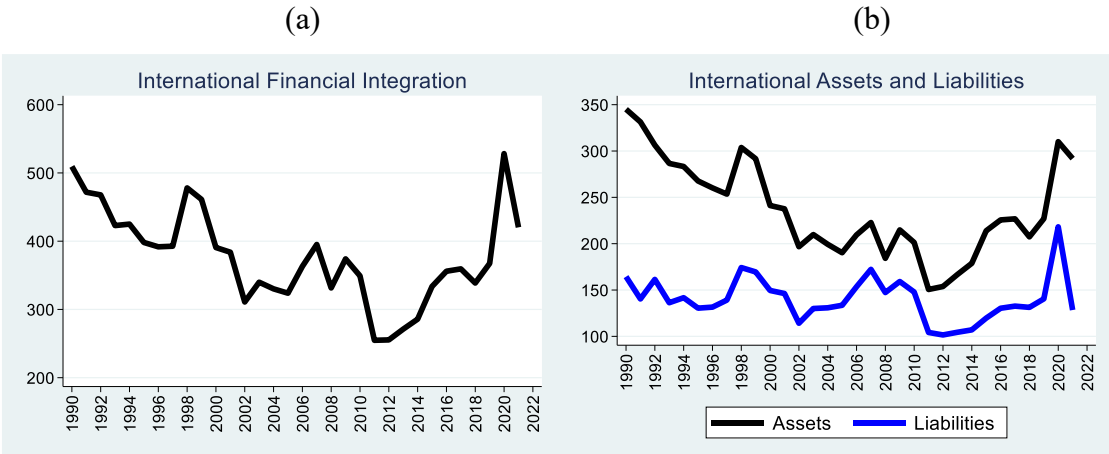


Figure 1.a shows the evolution of mean IFI in MENA during the 1990-2021 period. Accordingly, IFI tends to diminish during the first two decades and then it begins to increase during the rest of the period. Figure 1.b decomposes IFI into assets and liabilities flows. Assets flows appear to be much higher than liabilities flows during the whole period. This may indicate that IFI is mainly driven by assets flows in MENA. According to Figure 1.b, assets and liabilities flows tend to move together. The figure also suggests that the spread between assets and liabilities is much higher during the pre-crisis period, albeit it appears to diminish over the years.

**Figure 2.** Regional Financial Integration

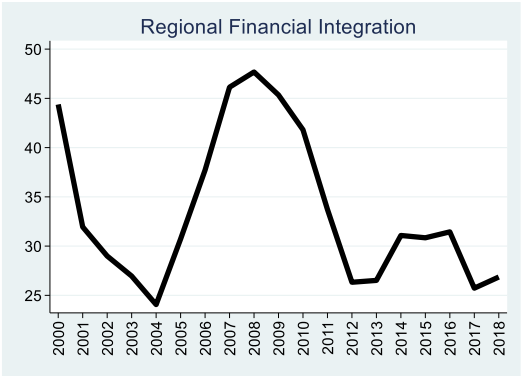




Figure 2 shows the mean regional financial integration (RFI) in MENA during the 2000-2018 period. The figure indicates that RFI decreases initially, seems to increase until the recent global financial crisis, mitigates up to 2012, and then shows a slight increase during the rest of the period. As compared to Figure 1.a, regional financial integration is substantially much lower than international financial integration in MENA.

**Figure 3.** Regional Financial Asset Transactions in MENA

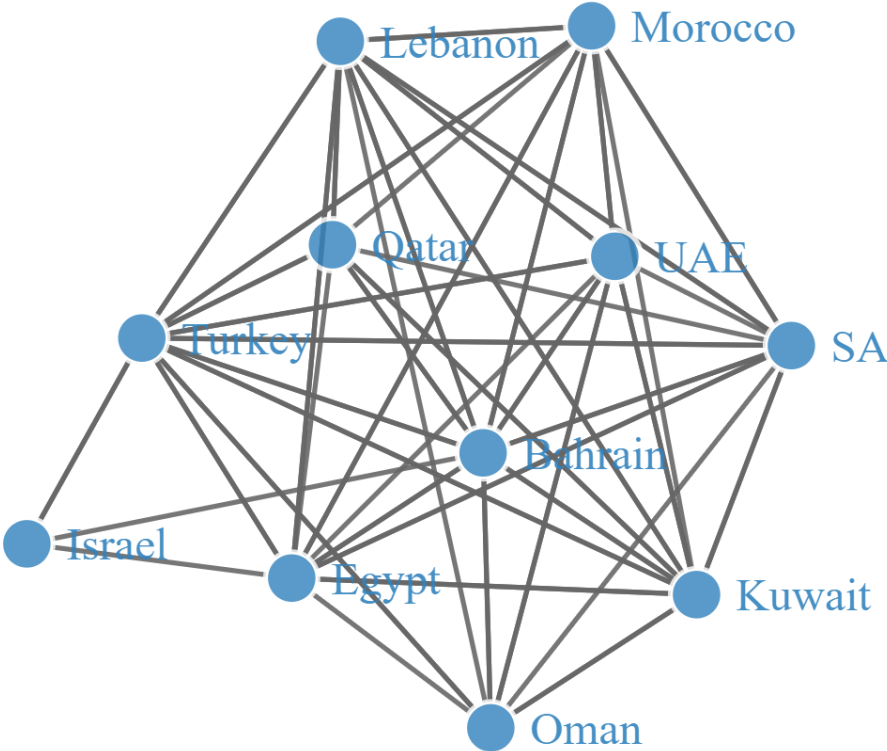


Figure 3 represents the regional financial asset transactions in our sample. Apparently, financial asset transactions of Israel concentrate only on Turkey, Bahrain and Egypt. The latter countries, however, are involved in financial asset transactions for each country in the MENA sample. The Gulf Cooperation Council countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates) appear to have more financial asset transactions with each other.

**Figure 4.** Structural Domestic Conditions in MENA

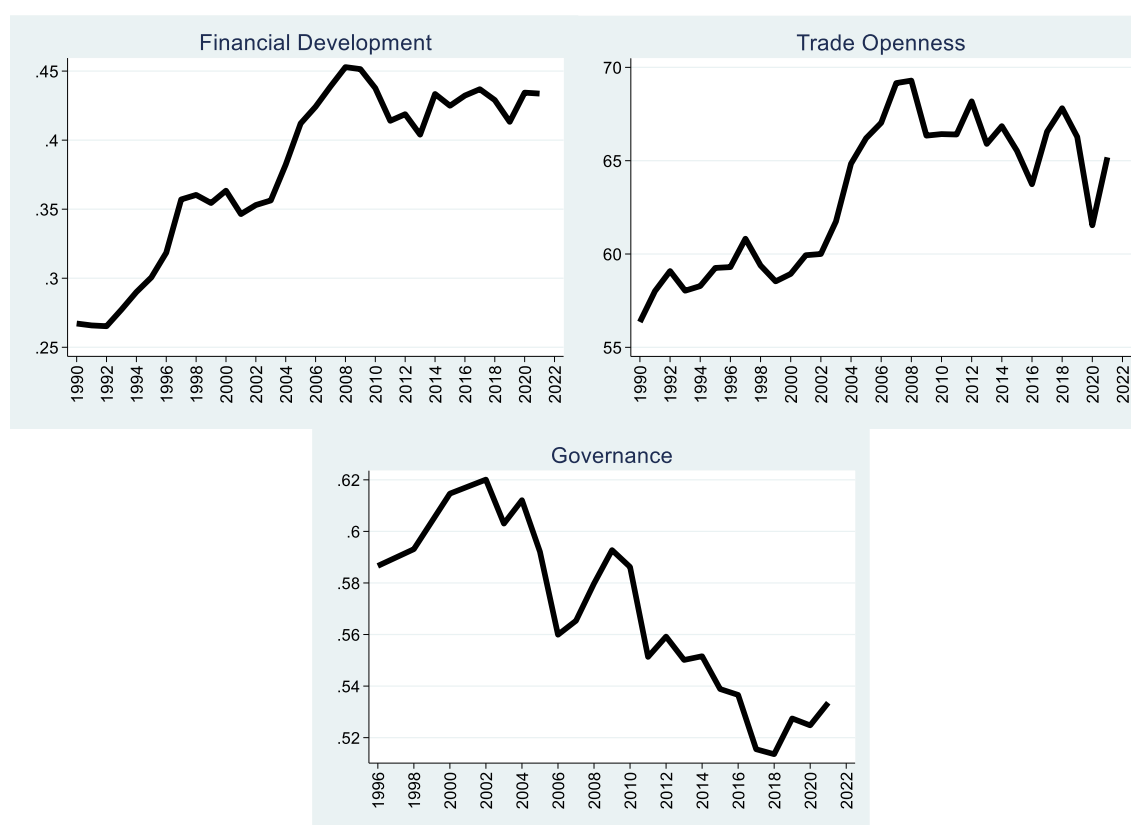


Figure 4 shows the evolution of structural domestic conditions including financial development, trade openness and governance. Financial development tends to increase substantially till the global financial crisis while it decreases slightly during the rest of the period. This pattern appears to be the case for trade openness. There is a slight increase in governance up to 2002, albeit it appears to follow a decreasing path during the rest of the period.

**Table 2.** The Main Descriptive Statistics and Variance Inflation Factor

	IFI	RFI	Real GDP per capita	FD	GOV	TRADE	VIX
<i>Whole Sample</i>							
Mean	377.3	33.6	41209.2	0.38	0.57	64.27	19.48
Median	211.7	2.6	35065.8	0.37	0.56	63.78	17.67
S.D.	464.8	90.1	30810.7	0.11	0.23	15.6	5.84
<i>Variance Inflation Factor</i>							
		1.52	1.93	1.75	2.17	2.00	1.02

**Notes:** S.D. represents the standard deviation for the corresponding variable.

Table 2 presents the main descriptive statistics and variance inflation factor. Accordingly, the mean of international financial integration is much higher than regional financial integration

in MENA. The mean real income per capita is around 41209 US dollars in constant 2017 prices. Mean financial development is around 0.38. Considering the financial development index varies between zero and one, we may suggest that financial development in MENA is relatively lower. We normalize the governance variable to have a variation between zero and one. The mean of GOV which is around 0.57 indicates that MENA economies appear to have relatively low institutional quality and governance. Considering TRADE is between one and hundred, the estimated mean around 64.27 may indicate that MENA economies are relatively open to international trade. Table 2 also indicates that variance inflation factors of the variables are substantially less than 10 suggesting the lack of serious multicollinearity.

### 3. Empirical Methodology and Estimation Results

#### 3.1. Drivers of International and Regional Financial Integrations

To examine the drivers of international and regional financial integrations, we consider the following benchmark equations:

$$IFI_{it} = \beta_0 + \beta_1 IFI_{i,t-1} + \beta_2 RGDPpc_{it} + \beta_3 FD_{it} + \beta_4 GOV_{it} + \beta_5 TRADE_{it} + \beta_6 \Delta VIX_t + e_{it} \quad (1)$$

$$RFI_{it} = \beta_0 + \beta_1 RFI_{i,t-1} + \beta_2 RGDPpc_{it} + \beta_3 FD_{it} + \beta_4 GOV_{it} + \beta_5 TRADE_{it} + \beta_6 \Delta VIX_t + e_{it} \quad (2)$$

In equations (1) and (2),  $i$  represents the countries and  $t$  denotes the years. In the equations, IFI is international financial integration, RFI is regional financial integration, RGDPpc is logarithm of real income per capita, FD is financial development index, GOV is normalized institutional quality and governance, TRADE is *de facto* trade openness and  $\Delta VIX$  is the logarithmic difference of volatility and risk aversion index. The levels of both international and regional financial integrations appear to be highly persistent as indicated by Figures 1.(a) and 2. The collateral benefits argument suggested by Kose et al. (2009) may also indicate that real income per capita, financial development, trade openness and governance can be potentially endogenous for international and regional financial integrations. To tackle the potential endogeneity concerns, we employ system generalized method of moments (GMM) estimation procedure (Arellano and Bond, 1991; Arellano and Bover, 1995). To estimate equations (1) and (2), we maintain that all the variables are potentially endogenous except  $\Delta VIX$ . We consider  $\Delta VIX$  as strictly exogenous for the evolution of financial integrations. In the estimation, we use the second and third lags of the endogenous variables as instruments. Bond (2002) remarks that dependent variable can be treated symmetrically with the endogenous variables. Consequently, we also maintain the same lag structure for dependent variable. A large instrument set can weaken the instrument validity test and therefore we use the collapse command of Roodman (2009).

We estimate equations (1) and (2) for 11 MENA economies during the 1996-2020 period. Table 3 reports the system GMM estimation results. The validity of instruments and consistency of GMM estimators require the lack of higher order serial correlation. The estimated equations in Table 3 pass the residual diagnostics including the second order autocorrelation and Sargan instrument validity tests.

	IFI (Eq. 1)	RFI (Eq. 2)
IFI <sub>i,t-1</sub>	0.899*** (0.122)	
RFI <sub>i,t-1</sub>		0.882*** (0.064)
RGDPpc <sub>it</sub>	-0.032 (0.031)	0.188** (0.090)
FD <sub>it</sub>	0.135* (0.075)	0.073 (0.220)
GOV <sub>it</sub>	-0.013 (0.043)	0.088 (0.080)
TRADE <sub>it</sub>	0.002*** (0.001)	0.005* (0.003)
ΔVIX <sub>t</sub>	-0.023** (0.010)	0.003 (0.009)
Constant	2.617 (1.676)	1.652 (2.360)
# of Observations	264	198
# of Countries	11	11
Time FE	Yes	Yes
AR1 [p-value]	0.00	0.17
AR2 [p-value]	0.171	0.624
Sargan Test [p-value]	0.625	0.05
Wald-Test	0.00	0.00

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

The estimated coefficient for lagged international financial integration suggests that the current value of it may not be independent of the past value. This appears to be the case for regional financial integration. The relationship between real income per capita and international financial integration is insignificant while there is a positive association between real income per capita and regional financial integration. This result can suggest that MENA economies with higher real income per capita tend to have more regional financial integration. This is mainly consistent with Espinoza et al. (2011) suggesting that Bahrain and Kuwait mainly invest in Gulf Cooperation Council countries including Oman, Qatar, Saudi Arabia and United Arab Emirates. There is a positive and significant association between financial development and international financial integration whilst this is statistically insignificant for regional financial

integration. Consistent with Martin and Rey (2006), this result suggests that better domestic financial development increases demand for domestic liabilities. Enhanced domestic financial development also diminishes the barriers on financial asset transactions. The effect of governance on both international and regional financial integrations is statistically insignificant. There is a positive and significant relationship between trade openness and international financial integration. The positive association also holds for regional financial integration. The positive association between trade and financial integrations is consistent with the studies by Obstfeld and Rogoff (2001), Obstfeld (2007) and Lane and Milesi-Ferretti (2008). Accordingly, trade linkages enhance information flows and default risk. In addition, trade linkages encourage financial asset transactions because the former increases export insurance, trade credits and payment facilities. Favorable global financial conditions proxied with a decrease in VIX tend to promote international financial integration. The bulk of the literature including Calvo et al. (1993), Fernandez-Arias (1996) and Koepke (2019) suggest that push factors represented with external conditions tend to increase international financial asset transactions. Worsening global financial conditions proxied with an increase in VIX appear to increase regional financial integration, albeit this effect is statistically insignificant.

#### **4. Collateral Benefits of Regional and International Financial Integrations:**

##### **4.1. Domestic Financial Development and Its Main Components**

The literature provides mixed evidence on the beneficial effects of financial integration as briefly discussed in the Introduction. Recent studies including Kose et al. (2011), Broner and Ventura (2016) and Furceri et al. (2019) suggest the crucial importance of collateral environment to explain the gains of financial integration. Kose et al. (2009) maintains that the benefits of financial integration are not simple to be measured directly because they might be catalytic and indirect. In addition, they indicate that these collateral benefits are likely to promote growth and stability.

Financial development is one of the most important collateral benefits accrued by financial integration according to Kose et al. (2009). Access to international financial markets is expected to increase regulatory and supervisory frameworks on domestic financial development and quality of financial services. Levine (2001) suggests that financial integration can raise stock market liquidity and banking system efficiency. Aghion and Banerjee (2005) and Caballero and Krishnamurthy (2001) remark that procyclicality of capital flows is much lower in economies with efficient financial markets.

To investigate the effect of international financial integration on financial development, we estimate:

$$FD_{it} = \beta_0 + \beta_1 FD_{i,t-1} + \beta_2 RGDPpc_{it} + \beta_3 IFI_{it} + \beta_4 IFI_{it}^2 + e_{it} \quad (3)$$

In eq. (3), FD is financial development index, RGDPpc is logarithm of real income per capita, IFI is international financial integration. Kose et al. (2011) remarks that economies with high levels of international financial integration are more able to reap the collateral benefits of financial openness. To consider this important point, we also include the square of the international financial integration variable into eq. (3). We estimate eq. (3) by employing system GMM method. We maintain that lagged dependent variable, real income per capita, international financial integration and its square are potentially endogenous for financial development. We use the second and third lags of endogenous variables as instruments. We also use the collapse command suggested by Roodman (2009).

**Table 4.** International Financial Integration and Domestic Financial Conditions

Dependent Variable	FD Eq. (3.1)	FI Eq. (3.2)	FM Eq. (3.3)	FMD Eq. (3.4)	FME Eq. (3.5)	FMA Eq. (3.6)
FD <sub>i,t-1</sub>	0.944*** (0.109)					
FI <sub>i,t-1</sub>		0.915*** (0.051)				
FM <sub>i,t-1</sub>			0.928*** (0.103)			
FMD <sub>i,t-1</sub>				0.924*** (0.092)		
FME <sub>i,t-1</sub>					0.809*** (0.113)	
FMA <sub>i,t-1</sub>						0.763*** (0.099)
IFI <sub>it</sub>	0.333** (0.146)	0.030 (0.071)	0.640** (0.267)	0.525** (0.230)	0.335 (0.600)	0.824*** (0.292)
IFI <sub>it</sub> <sup>2</sup>	-0.311** (0.141)	0.015 (0.070)	-0.626** (0.258)	-0.546** (0.220)	-0.298 (0.576)	-0.849*** (0.287)
RGDPpc <sub>it</sub>	-0.049** (0.024)	0.013 (0.021)	-0.111** (0.045)	-0.057 (0.043)	-0.201** (0.093)	-0.024 (0.056)
Constant	0.291 (1.522)	-0.882* (0.512)	0.839 (1.898)	1.010 (1.855)	0.460 (2.803)	-2.587 (1.925)
# of Observations	319	319	319	319	319	319
# of Countries	11	11	11	11	11	11
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
AR1 [p-value]	0.00	0.02	0.00	0.00	0.00	0.00
AR2 [p-value]	0.983	0.196	0.671	0.767	0.478	0.751
Sargan-Test[p-value]	0.309	0.318	0.548	0.434	0.233	0.938
Wald-Test [p-value]	0.00	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4 presents the system GMM estimation results of eq. (3). The estimated equations in the table pass the second order autocorrelation and instrument validity tests. To examine the effect of international financial integration on financial development, we disaggregate the latter as financial institutions and markets based on access, depth and efficiency. According to the results by Equation (3.1), financial development is highly persistent. The estimated coefficients for international financial integration and its square are, respectively, positive and negative indicating an inverted-U<sup>1</sup> shaped relationship between financial integration and financial development. This may imply that international financial integration tends to increase financial development while the high levels of financial integration appear to mitigate financial development in MENA. This result also suggests that “too much international financial integration” (Taşdemir, 2023) leads to lower financial development. David et al. (2015) suggests that the lack of macroprudential policies and financial sector regulations may promote excessive risk-taking behavior and credit growth. In addition, international financial integration may stimulate capital flight and increase the sensitivity to self-fulfilling panics. These factors, overall, may lessen the effect of financial integration on financial development especially in economies with more financially open.

We also estimate eq. (3) by using the main components of financial development. We consider financial institutions (FI) in eq. (3.2), financial markets (FM) in eq. (3.3), financial markets depth (FMD) in eq. (3.4), financial markets efficiency (FME) in eq. (3.5) and financial markets access (FMA) in eq. (3.6). Apparently, the inverted-U shaped relationship between international financial integration and financial development in eq. (3.1) is mainly driven by the financial markets as reported by eq. (3.3). A further disaggregation of financial markets with respect to depth, access and efficiency<sup>2</sup> reveals that inverted-U shaped relation between international financial integration and financial markets is determined by financial markets depth in eq. (3.4) and financial markets access in eq. (3.6)<sup>3</sup>. Real income per capita is negatively associated with financial development in eq. (3.1). Accordingly, this impact is driven by financial markets in eq. (3.3) and financial markets efficiency in eq. (3.5). This is consistent

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<sup>1</sup> We also utilize the test proposed by Lind and Mehlum (2010), which posits the null hypothesis of a monotonic or U-shaped relationship against the alternative hypothesis of an inverted-U relationship. The p-value of the test is 0.016, indicating the validity of an inverted-U-shaped relationship between these variables.

<sup>2</sup> We also disaggregate financial institutions with respect to depth, access and efficiency. Our results suggest that there is no significant effect of international financial integration on the disaggregated financial institutions variables. To save the space, we do not report the results but they are available on request.

<sup>3</sup> The p-values of the Lind-Mehlum (2010) test results are, respectively, 0.011 for eq. (3.4) and 0.002 for eq. (3.6).

with a view that higher income MENA economies tend to have lower financial markets efficiency and financial development.

We also investigate the relationship between financial development and regional financial integration. In this vein, we estimate:

$$FD_{it} = \beta_0 + \beta_1 FD_{i,t-1} + \beta_2 RGDPpc_{it} + \beta_3 RFI_{it} + \beta_4 RFI_{it}^2 + e_{it} \quad (4)$$

The potential endogeneity of regional financial integration and its square along with real income per capita for financial development leads us to estimate eq. (4) by utilizing system GMM estimation method. Table 5 presents the empirical results.

<b>Table 5. Regional Financial Integration and Domestic Financial Conditions</b>						
Dependent Variable	FD Eq. (4.1)	FI Eq. (4.2)	FM Eq. (4.3)	FMA Eq. (4.4)	FME Eq. (4.5)	FMD Eq. (4.6)
FD <sub>i,t-1</sub>	0.978*** (0.168)					
FI <sub>i,t-1</sub>		0.880*** (0.108)				
FM <sub>i,t-1</sub>			0.931*** (0.146)			
FMA <sub>i,t-1</sub>				0.450* (0.269)		
FME <sub>i,t-1</sub>					0.671*** (0.193)	
FMD <sub>i,t-1</sub>						0.915*** (0.112)
RFI <sub>it</sub>	-1.849** (0.944)	-0.067 (0.231)	-3.102** (1.505)	0.108 (0.905)	-7.471** (3.185)	-2.529 (1.557)
RFI <sup>2</sup> <sub>it</sub>	1.270** (0.644)	0.080 (0.153)	2.107** (1.036)	-0.256 (0.618)	5.270** (2.206)	1.732 (1.133)
RGDPpc <sub>it</sub>	0.027 (0.078)	0.054* (0.031)	-0.032 (0.139)	-0.104 (0.093)	-0.082 (0.241)	0.136 (0.093)
Constant	1.043 (1.996)	-1.230 (0.789)	1.804 (2.335)	-8.036*** (2.254)	4.381 (3.895)	2.955 (2.558)
# of Observations	209	209	209	209	209	209
# of Countries	11	11	11	11	11	11
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
AR1-Test [p-value]	0.00	0.01	0.00	0.07	0.00	0.01
AR2-Test [p-value]	0.123	0.387	0.295	0.683	0.906	0.188
Sargan-Test [p-value]	0.819	0.944	0.878	0.397	0.859	0.825
Wald-Test [p-value]	0.00	0.00	0.00	0.00	0.00	0.00

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

The estimated equations in Table 5 pass the residual diagnostics. The estimated parameter for lagged financial development is positive and statistically significant. This suggests that financial development is not transitory but instead highly persistent. This appears to be the case



also for the main components of the financial development index. The coefficient of regional financial integration is negatively significant and regional financial integration square is positively significant with financial development. The signs of the parameters indicate the presence of a U-shaped relationship between regional financial integration and financial development. These results imply that high levels of regional financial integration appear to increase financial development. This is consistent with the findings by Garica-Herrero and Wooldridge (2007) and Eyraud et al. (2017). Accordingly, regional financial integration promotes good practices in the financial system and stimulates financial development. Our empirical results, on the other hand, indicate that this is the case for economies with more regional financially integrated economies.

We also estimate eq. (4) by disaggregating financial development as financial institutions<sup>4</sup> (FI) in eq. (4.2) and financial markets (FM) in eq. (4.3). According to the results by eq. (4.3), the U-shaped relationship between regional financial integration and financial development is determined by financial markets. Then, we further disaggregate financial markets with respect to access (FMA) in eq. (4.4), efficiency (FME) in eq. (4.5) and depth (FMD) in eq. (4.6). Apparently, the U-shaped relationship between regional financial integration and financial development is mainly driven by financial markets efficiency. Real income per capita is positively associated with financial institutions. This may suggest that higher income MENA economies appear to have better financial institutions.

## **4.2. Governance and Its Main Components**

The collateral benefits argument also suggests that international financial integration tends to promote better institutional quality and governance. Bonaglia et al. (2001) finds that openness leads economies to enhance institutional environment and diminish corruption level, especially in the long run. Edison et al. (2002) reports that there is a positive association between international financial integration and governance. Roe and Siegel (2011) indicates that political stability shows the countries' willingness to enhance the institutional quality and governance which protect investors' rights. According to Mishkin (2009), globalization is among the important determinants of institutional reforms. Kose et al. (2009) remarks that foreign investors prefer to invest in economies with better governance. Stulz (2005) indicates that financial globalization stimulates corporate governance leading to mitigation in the cost of

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<sup>4</sup> Our results suggest that there is no significant effect of regional financial integration on the disaggregated financial institutions variables. To save the space, we do not report the results but they are available on request.

capital. Cornelius and Kogut (2003) and Morck et al. (2005) maintain that exposure to international investors leads countries to enhance their governance standards.

To explain the effect of international financial integration on governance, we consider the following equation:

$$GOV_{it} = \beta_0 + \beta_1 GOV_{i,t-1} + \beta_2 RGDPpc_{it} + \beta_3 IFI_{it} + \beta_4 IFI_{it}^2 + e_{it} \quad (5)$$

In eq. (5), GOV is the normalized aggregate governance indicator. The aggregate governance indicator is measured as the simple average of control of corruption (COC), government effectiveness (GE), political stability and no violence (PSNV), regulatory quality (RQ), rule of law (ROL) and voice and accountability (VAA). Considering the argument by Kose et al. (2011), we also incorporate the square of the international financial integration (IFI) variable. We estimate this equation by utilizing system GMM method because of the potential endogeneity concerns among the variables. We follow the same empirical procedures presented earlier to estimate eq. (5).

Table 6 presents the estimation results of eq. (5). Our measure of institutional quality and governance is GOV in eq. (5.1), VAA in eq. (5.2), ROL in eq. (5.3), RQ in eq. (5.4), COC in eq. (5.5), GE in eq. (5.6) and PSNV in eq. (5.7). According to residual diagnostics, the estimated equations pass the autocorrelation and Sargan instrument validity tests. The estimated parameter for lagged governance is positive and statistically significant in eq. (5.1). Such persistence impact appears to be the case also for the main components of institutional quality and governance which are represented by eq.s (5.2)-(5.7). In eq. (5.1), the effect of international financial integration on aggregate governance is negative but it is statistically insignificant. International financial integration square, on the other hand, is positively associated with governance. This result suggests that high levels of international financial integration led to better institutional quality and governance in MENA. Then, we consider the main components of governance in eq.s (5.2)-(5.7) because the aggregate governance indicator can conceal the individual effects of its main elements. The results in eq.s (5.2) and (5.4) suggest that the effects of international financial integration and its square are statistically insignificant, respectively, on voice and accountability and regulatory quality. International financial integration tends to increase rule of law as indicated by eq. (5.3) and this seems to be invariant to the level of international financial integration.

**Table 6.** International Financial Integration and The Main Components of Governance

Dependent Variable	GOV Eq. (5.1)	VAA Eq. (5.2)	ROL Eq. (5.3)	RQ Eq. (5.4)	COC Eq. (5.5)	GE Eq. (5.6)	PSNV Eq. (5.7)
GOV <sub>i,t-1</sub>	0.885*** (0.039)						
VAA <sub>i,t-1</sub>		0.872*** (0.086)					
ROL <sub>i,t-1</sub>			0.944*** (0.070)				
RQ <sub>i,t-1</sub>				0.987*** (0.049)			
COC <sub>i,t-1</sub>					0.832*** (0.158)		
GE <sub>i,t-1</sub>						0.977*** (0.046)	
PSNV <sub>i,t-1</sub>							0.866*** (0.078)
IFI <sub>it</sub>	-0.240 (0.153)	0.055 (0.331)	0.150* (0.077)	-0.153 (0.198)	-0.822*** (0.268)	-0.356*** (0.125)	-0.330 (0.202)
IFI <sup>2</sup> <sub>it</sub>	0.195* (0.118)	-0.047 (0.353)	-0.091 (0.098)	0.135 (0.227)	0.845*** (0.248)	0.279* (0.150)	0.450* (0.236)
RGDPp <sub>cit</sub>	0.055*** (0.019)	-0.059 (0.039)	0.027 (0.031)	0.026 (0.021)	0.162 (0.110)	0.055** (0.024)	0.107 (0.093)
Constant	3.045 (2.192)	4.441 (3.313)	0.555 (1.977)	1.666 (1.773)	3.028 (2.943)	-0.396 (2.230)	9.622* (5.771)
# of Observations	253	253	253	253	253	253	253
# of Countries	11	11	11	11	11	11	11
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR1-Test [p-value]	0.009	0.015	0.004	0.015	0.009	0.004	0.051
AR2-Test [p-value]	0.947	0.132	0.146	0.911	0.230	0.335	0.810
Sargan-Test [p-value]	0.296	0.411	0.063	0.114	0.046	0.856	0.644
Wald-Test [p-value]	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

As indicated by eq. (5.5), the level of international financial integration is negatively while the high levels of international financial integration are positively associated with control of corruption<sup>5</sup>. The signs of these parameters indicate that there is a U-shaped relationship between international financial integration and control of corruption. This may imply that low levels of international financial integration mitigate but high levels of international financial integration stimulate the control of corruption in MENA. According to the results by eq. (5.6), there is also

<sup>5</sup> Kaufmann and Kraay (2023) measures the control of corruption as the perceived degree to which public authority is wielded for personal benefit encompassing various forms of corruption both minor and significant. An increase in the value of control of corruption shows a mitigation in corruption.

an inverted-U shaped relationship between government effectiveness<sup>6</sup> and international financial integration. This relationship may suggest higher levels of international financial integration stimulate government effectiveness. The results in eq. (5.7) indicate that the effect of international financial integration on political stability and no violence is statistically insignificant, albeit international financial integration square is positively associated with political stability and no violence. This may imply that high levels of international financial integration promote political stability and no violence in our sample of MENA economies. The estimation results in Table 6 also indicate that there is a positive and significant relationship between real income per capita and governance. This positive association appears to be driven by government effectiveness in eq. (5.6). Accordingly, higher income MENA economies tend to have better government effectiveness and governance.

We now proceed with the investigation of the impact of regional financial integration on governance. To this end, we estimate:

$$GOV_{it} = \beta_0 + \beta_1 GOV_{i,t-1} + \beta_2 RGDPpc_{it} + \beta_3 RFI_{it} + \beta_4 RFI_{it}^2 + e_{it} \quad (6)$$

The endogeneity concerns led us to estimate eq. (6) with system GMM method. Our measure of governance is normalized aggregate governance indicator (GOV) in eq. (6.1), voice and accountability (VAA) in eq. (6.2), rule of law (ROL) in eq. (6.3), regulatory quality (RQ) in eq. (6.4), control of corruption (COC) in eq. (6.5), government effectiveness (GE) in eq. (6.6) and political stability and no violence (PSNV) in eq. (6.7). Consistent with the previous sections, we follow the same empirical procedures. All the estimated equations in Table 7 pass the residual diagnostics.

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<sup>6</sup> Government effectiveness is measured as the quality of public and civil services, independence of the civil service from political influences; the quality of policy creation and implementation, and the government's commitment to the credibility of these policies (Kaufmann and Kraay, 2023).

**Table 7.** Regional Financial Integration and The Main Components of Governance

Dependent Variable	GOV Eq. (6.1)	VAA Eq. (6.2)	ROL Eq. (6.3)	RQ Eq. (6.4)	COC Eq. (6.5)	GE Eq. (6.6)	PSNV Eq. (6.7)
GOV <sub>i,t-1</sub>	0.959*** (0.029)						
VAA <sub>i,t-1</sub>		0.962*** (0.053)					
ROL <sub>i,t-1</sub>			0.891*** (0.038)				
RQ <sub>i,t-1</sub>				0.910*** (0.042)			
COC <sub>i,t-1</sub>					0.976*** (0.048)		
GE <sub>i,t-1</sub>						0.981*** (0.040)	
PSNV <sub>i,t-1</sub>							0.865*** (0.098)
RFI <sub>it</sub>	-0.028 (0.031)	0.144 (0.095)	0.077 (0.073)	-0.033 (0.161)	-0.100 (0.428)	-0.288** (0.145)	0.046 (0.532)
RFI <sup>2</sup> <sub>it</sub>	0.031* (0.018)	0.044 (0.143)	-0.048 (0.047)	0.079 (0.099)	0.063 (0.242)	0.287*** (0.098)	0.613** (0.268)
RGDPp <sub>cit</sub>	0.016 (0.021)	-0.006 (0.029)	0.058** (0.027)	0.029 (0.032)	0.017 (0.044)	0.043 (0.029)	0.091 (0.190)
Constant	2.619 (2.309)	3.550 (2.339)	1.696 (2.741)	6.491** (2.566)	5.073* (3.111)	2.664 (2.708)	4.237 (10.299)
# of Observations	209	209	209	209	209	209	209
# of Countries	11	11	11	11	11	11	11
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR1-Test [p-value]	0.008	0.011	0.004	0.011	0.003	0.004	0.053
AR2-Test [p-value]	0.798	0.054	0.186	0.812	0.286	0.407	0.602
Sargan-Test [p-value]	0.696	0.082	0.326	0.652	0.670	0.720	0.529
Wald-Test [p-value]	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

The estimated coefficient of lagged aggregate governance is positive and statistically significant. Such persistence impact seems to be also the case for the main components of governance. The effect of regional financial integration on aggregate governance is statistically insignificant. Regional financial integration square, on the other hand, is positively associated with aggregate governance suggesting that high levels of regional financial integration promote governance. The effects of regional financial integration and its' square on voice and accountability, rule of law, regulatory quality and control of corruption are statistically insignificant. In eq. (6.6), the estimated parameters of regional financial integration and its' square are, respectively, negative and positive. These are consistent with the presence of a U-shaped relationship between regional financial integration and government effectiveness.

Apparently, regional financial integration mitigates government effectiveness while high levels of regional financial integration enhance government effectiveness. In a similar vein to eq. (5.7) in Table 6, the positive and significant impact of regional financial integration on political stability and the absence of violence is observed only at higher levels of the former. There is also a positive and significant relationship between real income per capita and rule of law. This suggests that higher income MENA economies tend to have better rule of law.

## **5. Concluding Remarks and Some Policy Implications**

The theoretical benefits of openness to international financial flows include better risk sharing, efficient capital allocation, and enhanced growth prospects. However, the empirical literature provides mixed evidence on the beneficial effects of financial openness. According to Kose et al. (2009), these benefits often operate through indirect channels, such as financial development and governance, ultimately resulting in total factor productivity growth and macroeconomic stability. Recently, the IMF has remarked that growth prospects have slowed in both advanced and emerging market economies. Given that capital flows are procyclical (Kaminsky et al., 2004), this projection may imply a slowdown in capital flows and international financial integration, posing an impediment for countries to realize these beneficial effects. There is a new and growing literature suggesting regional financial integration is expected to insulate the economies from external shocks. This paper contributes to the literature by calculating regional financial integration based on the bilateral financial flows data for Middle East and North Africa (MENA) countries which are often neglected by literature. We also contribute to literature by investigating the drivers and collateral benefits of international (IFI) and regional financial integrations (RFI). In this context, we consider the sample of 11 MENA economies during the 1996-2020 period.

We find that IFI is mainly driven by financial development, trade openness and favorable global financial conditions while RFI is mainly determined by real income per capita and trade openness. In addition, our empirical findings indicate that too much IFI mitigates whilst high levels of RFI encourage domestic financial development. Higher IFI and RFI, on the other hand, both lead to better institutional environment by reducing corruption, increasing rule of law, promoting government effectiveness and political stability.

The adverse effect of too much IFI on financial development may be related with an argument by Alotaibi and Mishia (2017) suggesting that stock and bond markets are underdeveloped especially in Gulf Cooperation Council countries. This side impact may also

be caused by inefficiently functioning state-owned enterprises which are the main pillars of the banking sector and limited access to financial markets as indicated by Emara and El Said (2021). To mitigate such adverse effects, MENA countries may better consider regulation of financial sector and incentivize private sector participation to banking sector. In addition, policy makers should prioritize the development of stock and bond markets to provide efficient allocation of funds.

Given that the institutional environment in MENA is relatively weak (Emara and El Said, 2021) reflecting overall market (Albaity et al., 2021) and risk-taking behaviors (Ellis et al., 2014), the promotion of IFI and RFI is expected to enhance both governance and risk-taking perception. In addition, financial interdependence in MENA is expected to generate common shared interests, provide stability and diminish the likelihood of conflict. Furthermore, financial integration promotes confidence and trust and encourages the economies to engage in diplomatic negotiations and peaceful dialogue.

To conclude, our results suggest that collateral benefits increase with financial integrations in MENA, attracting more financial flows in turn. Given that capital flows are procyclical, this may be expected to increase growth. According to Kose et al. (2009), these benefits will also increase total factor productivity. To reap the collateral benefits, MENA economies may extend the financial linkages with the world and region. Currently, regional financial integration is mostly concentrated among the Gulf Cooperation Council countries. Dissemination of financial integration also with the other countries in the region will increase regional financial integration further. This may enhance the collateral benefits, economic growth, region's bargaining power in the world along with strengthened political stability and peace. To encourage regional financial integration further, MENA economies should commit themselves to structural reforms containing multilateral trade agreements, capital account liberalization policies, elimination of the impediments on regional financial integration, improvement in institutional environment and financial development. In this vein, policymakers may be suggested to design policies aiming to maximize the benefits of both international and regional financial integrations.

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