FINANCIAL INTEGRATION, STABILITY, AND SPILLOVERS IN THE EURO-MEDITERRANEAN REGION:
Implications for Enhanced SMCs Financial Markets

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ABSTRACT

Using a Structural Vector Auto Regression (SVAR) model, this study analyses the dynamic financial spillovers of the European Union's (EU) leading economies on their neighbors in the south (Lebanon, Tunisia, Morocco, and Jordan) and their implications on regional financial integration and stability. Our empirical results show that major EU's economies can generate significant regional spillovers through regional financial market linkages. We therefore argue with enhanced Euro-Mediterranean financial integration and vulnerability of the South Mediterranean Countries (SMCs), financial liberalization should be implemented gradually because there is a need to ensure that proper institutional infrastructures, such as strong prudential regulations and supervision, are put in place in order to avoid any potential future financial instability or crises. Moreover, the development of the domestic SMCs' bond market should be made a priority to reduce financial instability and to tackle the existing negative spillover effects within the Euro-Mediterranean region.

En utilisant un modèle structurel d'autorégression vectorielle (SVAR), cette étude analyse les retombées financières dynamiques des principales économies de l'Union européenne (UE) sur leurs voisins du sud (Liban, Tunisie, Maroc et Jordanie) et leurs implications sur l'intégration et la stabilité financières régionales. Nos résultats empiriques montrent que les principales économies de l'UE peuvent générer des retombées régionales significatives grâce aux liens entre les marchés financiers régionaux. Nous soutenons donc qu'avec le renforcement de l'intégration financière euro-méditerranéenne et la vulnérabilité des pays du sud de la Méditerranée (PSM), la libéralisation financière devrait être mise en œuvre progressivement puisqu'il est nécessaire de s'assurer que des infrastructures institutionnelles appropriées, telles que des réglementations prudentielles et une supervision solides, sont mises en place afin d'éviter toute instabilité ou crise financière potentielle à l'avenir. En outre, le développement du marché obligataire national des PSM devrait être une priorité afin de réduire l'instabilité financière et de s'attaquer aux retombées négatives existantes au sein de la région euro-méditerranéenne.

تحلل هذه الدراسة التداعيات المالية الديناميكية للاقتصادات الرائدة في الاتحاد الأوروبي على الدول المجاورة في الجنوب (لبنان وتونس والمغرب والأردن) وآثارها على التكامل والاستقرار المالي الإقليمي، باستخدام نموذج الانحدار الذاتي الهيكلي المتجه (SVAR). تُظهر النتائج التجريبية لهذه الدراسة أن الاقتصادات الرئيسة في الاتحاد الأوروبي يمكن أن تولد تأثيرات إقليمية كبيرة من خلال روابط الأسواق المالية الإقليمية. ولذلك، فإننا نجد أنه مع تعزيز التكامل المالي الأورومتوسطي وضعف بلدان جنوب البحر الأبيض المتوسط، ينبغي تنفيذ التحرير المالي تدريجيًا لأن هناك حاجة إلى ضمان وضع البنى التحتية المؤسسية المناسبة، مثل الأنظمة الاحترازية القوية والإشراف، من أجل تجنب أي اضطرابات أو أزمات مالية محتملة في المستقبل. وعلاوة على ذلك، ينبغي إعطاء الأولوية لتطوير سوق السندات المحلية لبلدان جنوب البحر الأبيض المتوسط للحد من عدم الاستقرار المالي ومعالجة الآثار السلبية غير المباشرة القائمة داخل المنطقة الأورومتوسطية.

INTRODUCTION

There is a growing body of empirical literature on the magnitude of financial spillovers from one set of countries[1] to another in various geographical settings (intra-regional, inter-regional and global) and the different channels of transmission through which these spillover effects are passed over. The literature on regional spillovers shows that regional linkages could occur through a wide range of channels including financial, foreign direct investment (FDI), trade, tourism, bank lending, labor mobility, and remittances. Using a Structural Vector Auto Regression model, impulse response functions and Granger causality tests, we analyze in this study the dynamic financial spillovers of the EU's leading economies on a selected sample of their neighbors in the south (Lebanon, Tunisia, Morocco, and Jordan) and their implications on financial integration and stability within the Euro-Mediterranean region. So far, SVAR models have not yet been used in the literature to explore the dynamic financial interrelationships between the two sets of countries within this region. According to the wider literature, in addition to the financial and trade channels for the transmission of financial shocks within a region, there may also be significant spillovers through less measurable channels, including through political instability or security channels.

The International Monetary Fund (IMF) and the EU's Macroeconomic and Financial Assistance (MFA) programs have been designed to foster international and regional financial stability and dampen therefore the negative spillover effects of hastened financial liberalization on one hand, and the transmission of financial crises on the other.[2] In the absence of financial stability, it is now recognized that the past financial and sanitary crises have had amplified damaging effects on macroeconomic and financial stability, economic growth and social welfare in the Euro-Mediterranean region. It is also well known that promoting financial stability is a matter of avoiding economic and financial crises, large swings in economic activity, and excessive volatility in foreign exchange and financial markets. Financial instability has so far increased economic uncertainty, discouraged investment, and impeded economic growth, destabilizing thus the Euro-Mediterranean regional financial integration, and hurting living standards on both sides of the Mediterranean.

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[1] In our case between the European Union (EU) countries and a selected sample of South Mediterranean Countries (SMCs) including Morocco, Tunisia, Jordan and Lebanon.

[2] The IMF and EU's Macroeconomic and Financial Assistance (MFA) programs are designed to foster regional and international macroeconomic and financial stability. In Tunisia, the MFA II program follows a first MFA program implemented between 2014 and 2017. The main incentive behind the second program was the impact of the terrorist attacks on Tunisia's external and tourism's sectors and it consists of a EUR 500 million (loan), approved in July 2016 and divided into 3 disbursements: EUR 200 million in October 2017; EUR 150 million in June 2019; and EUR 150 million disbursed in October 2019. The corresponding reforms areas to these funding programs are: public finance management and civil service reforms; taxation; social protection; labour market; financial sector; and investment climate and tourism. Linked to 2016 MFA program for Tunisia is the IMF program of USD 2.9 billion, or 375 percent of Tunisia's quota. For Jordan, the MFAII program follows a first MFA operation implemented between 2013 and 2015. The main trigger for this program was the Syrian refugee crisis and the corresponding influx into Jordan and it consists of a EUR 200 million (loan), approved in December 2016 and disbursed as follows: EUR 100 million in October 2017, and EUR 100 million in June 2019. The conditional reform areas pertaining to the MFA I and II programs in Jordan are: public finance management; tax reform; social safety nets; employment and trade; and water sector reform. The MFA programs in Jordan were also linked to the 2016 IMF program: USD 723 million, or 150 percent of Jordan's quota.

Moreover, underdeveloped domestic financial markets and sudden changes in the direction of capital flows have produced increased financial volatility/instability in the SMCs of Tunisia, Morocco, Lebanon, and Jordan, which do not have a well-rounded financial sector to accommodate the highly volatile nature of short-term capital flows. In addition, the lack of strong political and economic institutions to supervise and regulate financial markets in the selected SMCs that have initiated the development and liberalization of their financial markets, has been a contributing factor to financial instability. The absence of these institutions could trigger a financial and debt crisis, further widening current account and budget deficits and further contributing to higher debt levels.

Moreover, the increased financial integration of some SMCs' financial markets with the more mature markets of the EU, in the absence of a well-functioning regulatory environment, could cause financial instability and could trigger further capital flights. This was particularly true during the recent sanitary crisis in Tunisia and Jordan, where an IMF rescue financial package coupled with timely financial adjustment measures have restored regional financial stability and have prevented a currency and debt crises from unfolding. Efforts continue to be devoted in Jordan and Tunisia to introduce a more comprehensive reform program supported by IMF and EU's loans in a bid to further restore macroeconomic and financial stability and improve economic activity. It is clear the IMF and EU's intervention in Jordan and Tunisia has not only helped those countries stabilize their financial sector but has also had positive spillover effects on the selected SMCs' regional trading partners. Those interventions, which are designed to foster macroeconomic and financial stability in Jordan and Tunisia, have so far contributed to regional financial stability. They have also had a positive impact on political stability in a region that is prone to political/military turmoil.

Lebanon, Jordan, Morocco, and Tunisia qualify as small open economies with significant trade and financial relations with the EU. Financial shocks or increased financial instability emanating from the EU are expected to have significant regional spillover effects. It is now well known that the SMCs are highly sensitive to shocks in oil prices and to shocks originating in the EU; the SMCs' main source of FDI and capital flows and main trading partner. For instance, a negative oil price shock will negatively impact the SMCs which are classified as oil importers. Tunisia and Morocco have been particularly affected by the negative spillover effects of the debt and the recent Covid-19 crises in the EU which lowered EU's demand for both countries' exports, as well as the flow of FDI to the two SMCs.

Since FDI and remittance flows originate mostly from EU countries, promoting financial and economic stability in the SMCs will is expected to reduce domestic and regional political tensions, which could subsequently increase tourism and remittance revenues, as well as investment flows. While FDI inflows to Tunisia have averaged 2 % of GDP over the period 2014-2022, they were slightly higher at 3% of GDP in Morocco. The same is true for remittances which averaged 4% of GDP in Tunisia but were slightly higher in Jordan at 9% of GDP over the same period. Remittances, which averaged 25% of GDP in the last couple of years, have kept Lebanon's economy running despite the sever financial crisis which is still unfolding. Therefore, increased political and economic stability, which are the result of the EU's MFA programs in Jordan and Tunisia, will have positive political spillover effects on the SMCs, making them more attractive to FDI, remittances, and tourism flows. The presence of the MFA and IMF programs which have been especially designed to promote political stability in the selected SMCs in general and in both Tunisia and

Jordan in particular, will have positive political regional spillovers effects into neighboring SMCs' trading partners. Beyond the needed financing assistance that those programs are providing, the set of reforms they entail have so far contributed positively in promoting regional political and financial stability.

The remainder of the paper is as follows. After an overview of the most recent financial and macroeconomic developments and related literature in Section 2, Section 3 details the empirical methodology and results. Section 4 concludes the study with some policy implications.

MACROECONOMIC AND FINANCIAL OVERVIEW AND RELATED LITERATURE

The theoretical and empirical finance literature are rich in studies analyzing financial stability and integration, and the transmission mechanisms of financial shocks in developed and developing economies.[3] The literature argues that with increased financial and trade integration across the globe, economic and financial shocks are transmitted through two main channels: the financial and trade flows channels. Labor mobility, tourism, and remittances are also factors through which economic shocks are transmitted from one country or region to another. In addition, the recent financial and debt crises and their negative spillover effects on both developed and developing economies have brought the focus on the transmission channels of those shocks and their impact on financial stability to the forefront.

Moreover, there is a growing body of empirical literature on the magnitude of financial and growth spillovers from one set of countries to another in various geographical settings and the different channels of transmission through which these spillover effects are passed over.[4] Specific IMF studies on regional spillovers show that regional linkages could occur through a wide range of channels including financial, FDI, trade, tourism, bank lending, and remittances. Several Regional Economic Outlook (REO) reports produced by the IMF have analyzed the impact of the regions' leading economies on their neighbors' business cycles and financial sectors using econometric tools such as panel regressions, Vector Auto Regression models (VARs), and Global Vector Auto Regression models (GVARs) - see Table 1 below. The empirical results suggest that major emerging countries can generate significant regional spillovers through trade and financial   market linkages. According to the wider literature, in addition to the trade and financial channels for the transmission of business cycle and financial shocks within a region, there may also be significant spillovers through less measurable channels, including through political instability or security concerns.[5]

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[3] For a detailed discussion of issues pertaining to financial integration, financial stability, and financial crisis see Neaime (2012a, 2012b, 2016, 2017, & 2022).

[4] For instance, Kose et al (2017) The Global Role of the U.S. Economy Linkages, Policies and Spillovers, World Bank Group Policy Research Working Paper 7962. Poirson, H. and Weber, S. (2011) Growth Spillover Dynamics from Crisis to Recovery, IMF WP/11/218. Laxton, D. and Prased, E. (2000) International Spillovers of Macroeconomic Shocks, IMF WP 00/101.

[5] World Bank (2016) Regional Integration and Spillovers.

Table 1. Selected IMF Studies on Regional Financial and Trade Spillovers

Study	Country	Spillover Channels (qualitative assessment)	Econometric Tool	Results
Asia and Pacific, 2014	China	• Mainly trade • Limited regional financial integration	Panel regression	Significant regional spillovers: 1 percent decline in China's growth would lower GDP growth in the median Asian economy by 0.3 percent, twice as much as the estimated impact for the median non-Asian economy.
REO, Sub saharan Africa, 2012	South Africa	• Trade Fiscal (FRACU customs-sharing mechanism). • Monetary (Lesotho, Namibia and Swaziland peg their currencies to the rand). Remittances. • Financial (FDI and subsidiaries of South African banks in the region).	Dynamic Panel Regressions and VAR	No significant regional spillovers are found in the study
REO Western Hemisphere, 2012	Brazil	• Mainly trade • Limited regional financial integration	VAR	Significant impact on the Southern Cone economies: 1 percent decline in Brazil's growth would reduce Paraguay's output by 0.9 percent after a year and Argentina, Bolivia and Uruguay's output by about 0.25 percent.
India Article IV report, 2014	India	• Trade • Monetary (Nepal pegs its currency to the rupee) •Financial (FDI) • Remittances	GVAR	Significant spillovers on Nepal (1 percent decline in India GDP would lower Nepal's GDP by 0.21 percent after a year) but modest impact on the rest of the South Asian countries.

Source: IMF (2014) Triennial Surveillance Review - External Study - Risks and Spillovers.

A review of the literature on the potential impacts of financial assistance more specifically focuses on domestic (national) impacts. Even if, to some extent, effects of programs may be expected to transcend national boundaries, little attention has been placed on the potential spillover effects of such assistance on neighboring countries and trade partners (Askarov & Doucouliagos, 2015; Dedehouanou, & Kane, 2021).
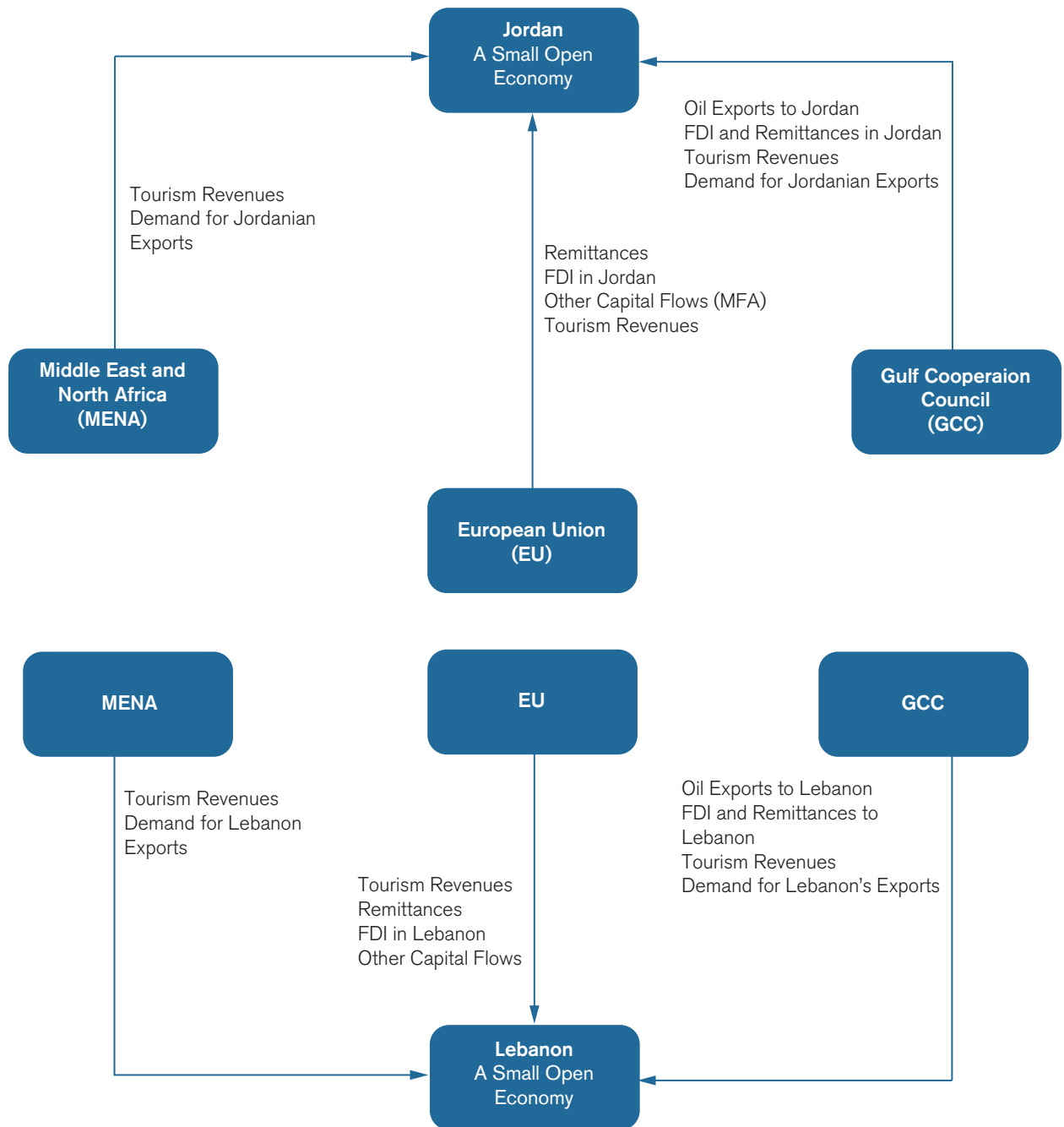
From the few existing references, in line with the literature on growth spillovers, two main spillover channels were identified: (1) Macroeconomic and financial channels and (2) other less important channels. For instance, Demir and Duan (2020), argue that financial assistance from international donors could also result in income effects within the recipient country that may increase the demand for goods and services from neighboring countries. Also, Askarov and Doucouliagos (2015) observe that positive spillover effects sometimes emerge through improvement in productivity and currency appreciation.[6] Under the other channels, Easterly and Levine (1998) also point out that in cases where the recipients of financial assistance are sometimes required to implement structural reforms, if successful, neighboring countries may adopt the same reform measures that promote financial stability. In this sense, such effects may result in balancing feedback - where successful reforms are emulated across neighboring countries to encourage foreign assistance for reform support (Vreeland, 2003[7]). Moreover, nations in transition often observe and emulate developments in others (Askarov and Doucouliagos, 2015). With the above in mind, this study adds to the existing literature on financial and economic spillovers by looking at the Euro-Mediterranean region and by employing and for the first time a SVAR model to model financial spillovers within the region.

With the exception of a few agricultural exports to the EU, Lebanon and Jordan qualify as small open economies with insignificant trade and financial relations with the rest of the Middle East and North Africa (MENA) region, including the Gulf Cooperation Council (GCC) (Figure 1). The same is true for Morocco and Tunisia with insignificant trade and financial relations with the rest of the (MENA) region including the GCC (Figure 2) but with significant imports and exports of goods and services and financial flows with the EU. While economic and financial shocks or increased financial stability emanating from other MENA countries are expected to have insignificant regional effects, all 4 economies are highly sensitive to either shocks originating in the EU due to extensive FDI, trade, and remittances, or to shocks originating in the GCC because of their heavy reliance on GCC's oil imports, as well as on GCC's remittances and FDI. While the decrease in oil prices, which resulted from the recent financial/sanitary crises, has reduced the SMCs' current account deficits, it has also reduced remittances, FDI inflows and tourism revenues originating from the EU (Figures 1 and 2). Tunisia and Morocco have been particularly affected by the negative spillover effects of the EU's debt and sanitary crises, which lowered EU's demand for Tunisia and Morocco's exports.

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[6] Askarov, Z., & Doucouliagos, H. (2015). Spatial aid spillovers during transition. European Journal of Political Economy, 40, 79-95.

[7] Vreeland, J. R. (2003). Why do governments and the IMF enter into agreements? Statistically selected cases. *International Political Science Review*, 24(3), 321-343.

Figure 1. Transmission Channels of Financial Shocks in Jordan and Lebanon


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                                    ┌─────────────────┐
                                    │     Jordan      │
                                    │  A Small Open   │
                                    │    Economy      │
                                    └─────────────────┘
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Tourism Revenues
Demand for Jordanian
Exports

Oil Exports to Jordan
FDI and Remittances in Jordan
Tourism Revenues
Demand for Jordanian Exports

Remittances
FDI in Jordan
Other Capital Flows (MFA)
Tourism Revenues

Middle East and North Africa (MENA)

Gulf Cooperaion Council (GCC)

European Union (EU)

MENA

EU

GCC

Tourism Revenues
Demand for Lebanon
Exports

Tourism Revenues
Remittances
FDI in Lebanon
Other Capital Flows

Oil Exports to Lebanon
FDI and Remittances to Lebanon
Tourism Revenues
Demand for Lebanon's Exports

Lebanon
A Small Open Economy

Source: Authors' Estimates.

Figure 2. Transmission Channels of Financial and Economic Shocks in Morocco and Tunisia

Jordan
A Small Open Economy

Oil Exports to Jordan
FDI and Remittances in Jordan
Tourism Revenues
Demand for Jordanian Exports

Tourism Revenues
Demand for Jordanian
Exports

Remittances
FDI in Jordan
Other Capital Flows (MFA)
Tourism Revenues

Middle East and
North Africa
(MENA)

Gulf Cooperaion
Council
(GCC)

European Union
(EU)

MENA

EU

GCC

Tourism Revenues
Demand for Lebanon
Exports

Oil Exports to Lebanon
FDI and Remittances to
Lebanon
Tourism Revenues
Demand for Lebanon's Exports

Tourism Revenues
Remittances
FDI in Lebanon
Other Capital Flows

Lebanon
A Small Open
Economy

Source: Authors' Estimates.

While FDI inflows to Tunisia and Morocco have averaged 2 % of GDP over the period 2014-2022, they were slightly higher at 3% of GDP in Jordan. The same is true for remittances, which averaged around 4% of GDP in Tunisia but were slightly higher in Morocco at about 5% of GDP over the same period (Table 2 below). Similarly, the trade deficit averaged 9% in Morocco and was slightly higher at about 10% in Tunisia. The trade deficit of the 2 SMCs is mainly registered against the EU as both SMCs import extensively goods and services from the EU's countries.

Table 2. Trade Balance, FDI and Remittances in Morocco and Tunisia (% of GDP), 2014-2022 _____

MOROCCO	FDI Inflows (% of GDP)	Trade balance (% of GDP)	Remittances (% of GDP)	TUNISIA	FDI Inflows (% of GDP)	Trade balance (% of GDP)	Remittances (% of GDP)
2014	3.0	-11.6	6.5	2014	2.0	-10.4	4.7
2015	2.9	-7.3	6.3	2015	2.1	-10.4	4.3
2016	1.9	-9.7	5.7	2016	1.4	-10.5	4.1
2017	2.3	-9.0	5.8	2017	1.9	-12.4	4.5
2018	2.8	-9.6	5.4	2018	2.3	-12.9	4.5
2019	1.3	-7.8	5.4	2019	1.9	-10.4	4.9
2020	1.2	-7.3	6.1	2020	1.4	-8.3	5.6
2021	1.6	-9.1	7.6	2021	1.1	-10.1	6.6
2022	1.6	-11.6	8.3	2022	1.0	-11.0	4.5

Source: International Monetary Fund, International Financial Statistics and Balance of Payments databases. World Bank, International Debt Statistics, and World Bank and OECD for GDP estimates.

While FDI inflows to Jordan have averaged 3 % of GDP over the period 2014-2022, they were slightly higher at 5% of GDP in Lebanon. The story is significantly different for remittances, which averaged more than around 10% of GDP in Jordan but were much higher in Lebanon at about 17% of GDP over the same period (Table 3 below). Similarly, the trade deficit in Jordan averaged 20% in Jordan and was even higher in Lebanon at about 25% in Lebanon. As was the case for Tunisia and Morocco, the trade deficit of the 2 SMCs is mainly registered against the EU as both SMCs significantly import goods and services from the EU countries.

Table 3. Trade Balance, FDI and Remittances in Jordan and Lebanon (% of GDP), 2014-2022

JORDAN	FDI Inflows (% of GDP)	Trade balance (% of GDP)	Remittances (% of GDP)	LEBANON	FDI Inflows (% of GDP)	Trade balance (% of GDP)	Remittances (% of GDP)
2014	5.9	-25.7	17.3	2014	6.0	-32.3	15.0
2015	4.1	-22.3	13.9	2015	4.3	-25.6	15.0
2016	3.9	-19.9	11.0	2016	5.0	-24.3	14.9
2017	4.9	-20.7	10.7	2017	4.8	-24.6	13.3
2018	2.2	-17.7	10.3	2018	4.8	-26.7	12.7
2019	1.6	-12.5	10.5	2019	3.7	-21.6	14.3
2020	1.7	-18.06	11.2	2020	5.1	-17.4	20.8
2021	1.4	-20.83	11.4	2021	2.6	-26.8	27.5
2022	1.5	-21.12	9.8	2022	1.2	-28.98	28.3

Source: International Monetary Fund, International Financial Statistics and Balance of Payments databases. World Bank, International Debt Statistics, and World Bank and OECD for GDP estimates.

EMPIRICAL METHODOLOGY AND RESULTS

As discussed above, there is significant empirical evidence in the literature that financial linkages are highly important in times of crises, and in terms of spillovers from advanced towards emerging and developing economies. The estimated spillover effects for the same set of countries differ in terms of magnitudes, signs, as well as with respect to detected operative transmission channels and factors determining these spillovers. For this reason, some emerging economies such as Brazil, Colombia, India, Indonesia, Peru, Philippines, Russia, South Africa, Thailand and Turkey have implemented restrictions on capital flows. It should be emphasized that Morocco, Tunisia, and Jordan and under either the EU or IMF funded programs have also implemented capital restrictions and macroeconomic prudential reforms. Surprisingly, however, there is evidence that those macro-prudential policies implemented have succeeded, to some extent, in attracting rather than preventing capital flows. The implemented macro-prudential policies in Morocco, Tunisia, and Jordan have created higher levels of trust regarding domestic institutions and have led to better expectations that a possible future financial and debt crisis will be effectively handled and averted (see Belke and Volz, (2019), and Belke, and Dubova, (2018)). Moreover, and after the Covid 19 pandemic, , the numerous downgrades of Tunisia, Jordan, Morocco and Lebanon's sovereign debts coupled with restrictions on access to the international financial market, some SMCs started recently to develop their domestic financial markets; mostly their bond markets as an alternative source of financing for the respective governments.

On the other hand, it is well known that VAR models (Sims, 1980) have become an increasingly powerful macroeconomic/financial tool to gauge the dynamic response of a set of endogenous variables to exogenous shocks, and to identify the particular shocks that dominate the intrinsic volatility in a set of endogenous variables. Within this context and following Kong (2012), the selected SMCs in our sample are all assumed to be small open economies subject to exogenous shocks originating in the EU and proxied by France,[8] which is one of the largest economies within the EU with significant economic relations with the SMCs. It is also well known that the EU is the SMCs' main financial and trading partner. SMCs do not only import EU goods and services and receive remittances and FDI from the EU, but also export agricultural and food products to the EU. It is, therefore, indeed the case that nominal oil price shocks and EU's business cycles and financial shocks have adversely affected SMCs' economies with devastating consequences on financial markets, balance of payments, public debt, and fiscal and current account deficits. As noted above, it is not only domestic factors that are contributing factors behind SMCs' financial imbalances, but

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[8] The choice of France to proxy for the EU's economies is justified by the extensive cultural, trade, and financial relations existing between France and Tunisia, Morocco, Jordan and Lebanon.

also the external financial policies of EU member countries. Other factors that can potentially ignite a financial crisis in emerging SMCs' economies may also include further increases in interest rates resulting from negative inflationary shocks in the EU.

In order to identify the financial linkages and spillovers from the EU towards the SMCs, a structural VAR model for y_t, a vector of n observable variables, will be first estimated. The SVAR model can be written as

$$A(L)y_t \ = \ A_0 \ (I_n \ - \ B_1 L \ - \ B_2 L^2 \ ....\ B_p L^P) y_t \ = A_0 e_t = B \ \epsilon_t, \quad (1)$$

where E_t is an nxn column vector of structural shocks; e_t is a nxn column vector of reduced-form shocks; A_0 an nxn matrix of contemporaneous effects between variables; and A(L) is a matrix lag polynomials such that

$$A(L) = A_0 \ - \ \sum_{k=1}^{p} A_k \ L^k. \quad (2)$$

After imposing the appropriate restrictions, we will then deduce Granger causality and impulse response functions from the estimated SVAR model in order to better gauge the size of the financial linkages and the nature and direction of their magnitudes that exist between the two regions.

DATA DESCRIPTION AND CHOICE OF MACROECONOMIC/FINANCIAL VARIABLES

The choice of the financial variables to be included in the SVAR model which will be estimated for each individual SMC, is motivated by the fact that these variables must be classified as endogenous variables in the theoretical/textbook sense for them to be helpful in identifying structural disturbances. It is well known that small open economies are sensitive to external financial shocks, and therefore, a foreign set of variables-in our case French variables- must be included along with domestic variables to isolate the effects of exogenous financial policy changes on SMCs' small open economies. As in Kim and Roubini (2000), Cushman and Zha (1997), and Fung (2002),[9] we include foreign (France) and domestic (SMCs) financial variables. Our data vector is {IR, FDI, SMI, GDP, IRFRA, SMIFRA, EX, OIL}, where OIL is the world price of oil denominated in US dollars; IRFRA is France's interest rates; SMIFRA is France's stock market index;[10] and EX is the exchange rate expressed as units of foreign currency (Euros) for one unit of the respective domestic SMC. The domestic variables include IR, SMCs' interest rates; FDI which is a measure of foreign direct investment inflows for each SMC; SMI is the SMCs' stock market index,[11] and GDP is the individual SMC's GDP. All variables will be taken in log difference except oil prices which will be taken in percentage point. The data set will span the period: Q1- 2002 through Q4- 2022 and will be retrieved from the Organization of Cooperation and Economic Development (OCED), the World

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[9] Inclusion of foreign variables in Kim and Roubini (2000) and Cushman and Zha (1997) solved previous anomalies, such as liquidity, price, exchange rate, and forward discount rate bias puzzles.

[10] SMIFRA is the CAC 40 stock market index, which is the benchmark index for the French equity market.

[11] We use the BLOM stock market Index for Lebanon, the ASE General Index for Jordan, the MASI stock market index for Morocco, and the Tunis stock market index TUNINDEX for Tunisia.

Bank's World Development Indicators, the IMF's International Financial Statistics, and the Saint Louis Federal reserve databases.

EMPIRICAL RESULTS

We start our empirical analysis by checking the stability condition which is a necessary first step to establish stationarity of the variables to be included in the SVAR model. We use a lag length of 4,[12] as indicated by the AIC, SBIC, and HQIC criteria which ensures that the SVAR model is stable i.e., all characteristic roots lie within the unit circle. Moreover, our identification procedure to recover structural shocks and, therefore, impulse response functions use restrictions on the contemporaneous structural parameters. The impulse response analysis is expected to generate an inference into the dynamic patterns and time path of reactions of SMCs' financial variables to shocks originating in France. Additionally, while the impulse response analysis will shed light on the duration of the effect of French shocks on the respective SMCs economies, granger causality tests will highlight their magnitude and direction of causality.[13]

Impulse response functions for the 4 SMCs under investigation indicate that with the exception of Morocco and Tunisia all shocks appear to be transitory in nature over a period of 3 quarters and tend to vanish in the long run. While France's stock market index shocks have permanent effects on Morocco and Tunisia's FDI and stock market indices, these shocks appear to have transitory effects in the case of Jordan and Lebanon. This points to a higher degree of financial market integration of Morocco and Tunisia's financial markets with those of the EU, and therefore greater vulnerability of the two SMCs to French financial shocks. This, however, appears not to be the case for Lebanon and Jordan where fluctuations in the French stock market index appear to only impact the flows of FDI into Jordan and Lebanon but not their respective stock markets, pointing to a lower degree of financial market integration of Jordan and Lebanon's financial markets with those of the EU, and therefore less vulnerability of those financial markets to financial shocks in the EU.

Moreover, shocks to French interest rates, affect Morocco and Tunisia's SMI and FDI flows significantly with either an alternating or pure negative effects, i.e.; Morocco and Tunisia's stock market indices and FDI inflows respond negatively to French monetary policy shocks. This has been indeed the case, whereby, higher French interest rates have had negative effects on the Morocco and Tunisia's stock markets and have diverted FDI and capital flows away from the two SMCs back into the EU. Likewise, Lebanon and Jordan's SMI, FDI, and interest rates do not respond to shocks in French's interest rates

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[12] At a lag length of 4, which is widely used in the empirical literature for quarterly data, the SVAR model satisfies the stability condition and all the variables turned out to exhibit stationarity.

[13] Convergence criterion of the maximum likelihood maximization/estimation was set to be less than or equal to 10^-8. Moreover, the gradient vector of the underlying estimated system approached zero at convergence values. It is therefore safe to assume that our estimates are optimal and, thus, empirical results such as impulse response functions and confidence intervals are reliable.

due on the one hand to the ineffectiveness of monetary policy under the fixed exchange rate regime to the US dollar in place, and the low financial market integration of those markets with the more mature EU's financial markets. The significant impact of French interest rates on Morocco and Tunisia is because the two SMCs are vulnerable to external financial shocks emanating in the EU. This has further widened their interest rate differential with France. Since these EU shocks have been persistent over the last decade, they could potentially trigger a balance of payment crisis in both SMCs. Accordingly, SMCs' current account deficits have been widening, so have the interest rate differentials, further worsening the national debt and the government budget deficit via increases in Morocco, and Tunisia's debt service (see also Neaime 2015b).

In order to further corroborate our impulse response functions' results, we conduct next Granger-causality tests to trace the short run dynamics and direction of causality between both sets of endogenous and exogenous variables. We are mainly interested in identifying whether France's interest rates and stock markets granger cause respective SMCs' financial variables, and whether changes in French monetary policies, i.e., changes in interest rates influence the inflow of SMCs' FDI and stock market performance.

Table 4 below indicates that French interest rates are found to granger cause Tunisia's interest rates, FDI, and SMI, at the one percent level of significance but not GDP. Similarly, France's stock market index significantly affects Tunisia's FDI and SMI, pointing to a high level of financial integration between Tunisia and the EU, to higher vulnerability of Tunisia to French financial shocks, and to a higher likelihood for EU's financial shocks to be transmitted to Tunisia. Moreover, Tunisia has recently experienced several downgrades of its public debt. This has put further pressure on domestic interest rates and has led to capital outflows posing difficulty for the government to continue financing its deficits and debt through the sale of government bonds. Taping the European financial markets to sell Tunisian government bonds has also become difficult as a result of those consecutive bond downgrades. The EU and through its Macroeconomic and Financial support programs to Tunisia is expected to reduce the financial pressures on Tunisia's government and reduce the government financing gaps. Higher French interest rates have impacted negatively the inflow of capital and have had negative effects on the country's stock market. The development of the local bond market is a must for Tunisia to be able to continue financing its government budget deficit and debt.

Table 4. Granger Causality Wald Tests: Tunisia

Equation		chi2	Probability
IRFRA	IR	15.18**	0.000
IRFRA	FDI	22.33**	0.002
IRFRA	SMI	11.12**	0.003
IRFRA	GDP	14.15	0.456
IRFRA	OIL	3.45	0.077
IRFRA	EX	12.11**	0.000
IRFRA	SMIFRA	13.11**	0.000
IRFRA	ALL	11.09	0.002

Equation		chi2	Probability
SMIFRA	IR	6.55	0.099
SMIFRA	FDI	33.55**	0.000
SMIFRA	SMI	2.67**	0.000
SMIFRA	GDP	4.66	0.100
SMIFRA	IRFRA	2.44**	0.000
SMIFRA	OIL	3.66	0.654
SMIFRA	EX	12.78**	0.002
SMIFRA	ALL	88.99	0.012

Notes: A * and ** Corresponds to significance level at 5% and 1 % respectively.
Source: Authors' Estimates.

Table 5 below indicates that French interest rates are found to granger cause Morocco's interest rates, FDI, SMI, and exchange rate, at the one percent level of significance. Morocco has recently liberalized its financial market and has become more financially integrated with the EU, on the one hand, and more vulnerable to EU's financial shocks on the other. This has led to capital outflows posing difficulty for the government to continue relying on FDI and short-term capital to bridge its financing gaps and to improve the growth rate of GDP. Taping the European financial markets to sell government bonds has also become difficult as a result of those macroeconomic and financial imbalances. It remains imperative for Morocco to develop its domestic stock and bond markets before engaging in further liberalizing of those markets and before further openness with the EU's financial market. Moreover, France's SMI significantly

affects Morocco's FDI and SMI, pointing again to a higher degree of financial market integration of Morocco with the financial markets of the EU. In other words, stock market developments in France have had negative financial effects on the inflow of FDI and the stock market in Morocco.

Table 5. Granger Causality Wald Tests: Morocco

Equation		chi2	Probability
IRFRA	IR	11.44**	0.000
IRFRA	FDI	15.77**	0.000
IRFRA	SMI	8.55**	0.003
IRFRA	GDP	22.44	0.678
IRFRA	OIL	25.88**	0.000
IRFRA	EX	18.19**	0.000
IRFRA	SMIFRA	22.44**	0.000
IRFRA	ALL	88.99	0.005

Equation		chi2	Probability
SMIFRA	IR	4.66	0.088
SMIFRA	FDI	13.55**	0.000
SMIFRA	SMI	2.44**	0.000
SMIFRA	GDP	13.45**	0.000
SMIFRA	IRFRA	4.66	0.456
SMIFRA	OIL	11.34	0.765
SMIFRA	EX	33.11**	0.002
SMIFRA	ALL	99.76	0.003

Notes: A * and ** Corresponds to significance level at 5% and 1 % respectively.
Source: Authors' Estimates.

Table 6 below indicates that while changes in French interest rates are found not to granger cause Lebanon's interest rates and the stock market index, they have a significant impact on FDI at the one percent level of significance. In 2020, Lebanon defaulted on its external debt. The result has been the inability of the government to continue selling bonds on the local or European financial markets in order to continue financing its chronic budget and current account deficits. The debt to GDP ratio is expected

to exceed the 500% threshold next year if corrective financial reforms/measures are not swiftly introduced. At this point, an IMF financing program would secure a plausible solution to the current crisis, moving Lebanon's economy to a market determined exchange rate, and securing access to the European capital markets. Moreover, France's SMI significantly affects Lebanon's FDI but not the stock market index. This points to the low level of financial market integration of Lebanon with the EU's financial markets, and subsequently to less vulnerability of Lebanon's financial market to shocks originating in the EU.

Table 6. Granger Causality Wald Tests: Lebanon

Equation		chi2	Probability
IRFRA	IR	4.33	0.779
IRFRA	FDI	1.22**	0.001
IRFRA	SMI	9.67	0.06
IRFRA	GDP	15.22**	0.001
IRFRA	OIL	18.99**	0.000
IRFRA	EX	9.87	0.234
IRFRA	SMIFRA	11.32*	0.022
IRFRA	ALL	99.76	0.000

Equation		chi2	Probability
SMIFRA	IR	4.33	0.065
SMIFRA	FDI	2.33**	0.000
SMIFRA	SMI	3.44	0.055
SMIFRA	GDP	11.33*	0.003
SMIFRA	IRFRA	2.66**	0.004
SMIFRA	OIL	32.55	0.321
SMIFRA	EX	5.22**	0.000
SMIFRA	ALL	102.3	0.001

Notes: A * and ** Corresponds to significance level at 5% and 1 % respectively.
Source: Authors' Estimates.

Table 7 below indicates that while French interest rates granger cause Jordan's GDP at the one percent level of significance, there is no impact of France's interest rate changes on Jordan's FDI, SMI, and interest rates. Jordan has secured financial assistance from the IMF and the European Union in order to manage its deteriorating macroeconomic and financial fundamentals. Jordan will soon lose the ability to access financial markets in order to bridge its financing gaps and secure its strategic imports. It is therefore imperative for Jordan to develop its local bond market as foreign capital inflow is drying out and as Jordan's public debt has been recently downgraded pointing to further difficulties for the government to continue selling bonds (to continue to borrow) on the European financial market. Moreover, France's SMI significantly affects Jordan's FDI, but not the stock market. This point to the fact that like Lebanon, Jordan appears not be financially integrated with the EU's financial market and therefore less vulnerable to EU's financial shocks.

Table 7. Granger Causality Wald Tests: Jordan

Equation		chi2	Probability
IRFRA	IR	33.77	0.434
IRFRA	FDI	0.44	0.654
IRFRA	SMI	3.22	0.044
IRFRA	GDP	22.44**	0.000
IRFRA	OIL	21.44**	0.000
IRFRA	EX	2.66	0.654
IRFRA	SMIFRA	8.87**	0.000
IRFRA	ALL	99.77	0.001

Equation		chi2	Probability
SMIFRA	IR	5.44	0.044
SMIFRA	FDI	3.44**	0.001
SMIFRA	SMI	11.32**	0.000
SMIFRA	GDP	22.44	0.754
SMIFRA	IRFRA	9.88**	0.000
SMIFRA	OIL	3.99	0.054
SMIFRA	EX	4.66**	0.001
SMIFRA	ALL	99.66	0.001

Notes: A * and ** Corresponds to significance level at 5% and 1 % respectively.
Source: Authors' Estimates.

Given France's factor endowments and technological advances, regional capital and foreign direct investment flows have been diverted away from SMCs countries and into France. This has induced SMCs to constantly increase domestic interest rates in order to attract capital from abroad. Such significant increases in interest rates have had devastating consequences on investment, growth, and debt service, and subsequently on past accumulated public debt and deficits.[14] As capital has been diverted away from SMCs and into France, SMCs have been experiencing trade and current account deficits, recession, and fiscal and financial imbalances. In short, one can safely assume that regional financial spillovers within the Euro-Mediterranean region appear to be significant. The Granger causality results have reinforced the impulse response analysis above.

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[14] See Krugman (2013 & 2015).

CONCLUSION AND POLICY IMPLICATIONS

Using a SVAR time series model, this paper explored the dynamic effects of EU's financial shocks on a sample of selected SMCs through impulse response functions and Granger causality tests. Impulse response functions for the selected SMCs under investigation have indicated that with the exception of Morocco and Tunisia shocks in Jordan and Lebanon appear to be transitory in nature over a period of 3 quarters and tend to vanish in the long-run. While fluctuations in France's stock market index have permanent effects on Morocco and Tunisia's FDI and stock market indices, these shocks appear to have transitory effects in Jordan and Lebanon. This point to a higher degree of financial market integration of Morocco and Tunisia's financial markets with those of the EU, and therefore greater vulnerability of the two SMCs to French financial shocks. This, however, appears not to be the case for Lebanon and Jordan where fluctuations in France's stock market index appear to only impact the flow of FDI into Jordan and Lebanon but not their respective stock markets, pointing to a lower level of financial market integration of Jordan and Lebanon's financial markets with those of the EU. Also, French interest rates are found to granger cause Morocco's interest rates, FDI, SMI, exchange rate, and GDP. While changes in French interest rates are found not to granger cause Lebanon's interest rates and the stock market index, they have a significant impact on FDI. Moreover, while French interest rates granger cause Jordan's GDP, there is no impact of France's interest rate changes on Jordan's FDI, SMI, and interest rates.

Our empirical results have shown that financial stability in the SMCs should become one of the main and more important goals of monetary policy in order to foster financial stability within the Euro-Mediterranean region. Monetary policy can become a contributing factor to financial stability and a more effective contributing macroeconomic tool to financial and economic stability in the Euro-MED region after moving away from fixed exchange rates in the presence of an open capital account, as is now the case in Lebanon and Jordan. This is referred to in the literature as the impossible trinity where fixed exchange rates and an open capital render monetary policy ineffective in counteracting the effects of domestic and foreign financial shocks. Moreover, it is well known that monetary and fiscal policies when used together effectively can also promote macroeconomic and financial stability. Therefore, rendering the 4 SMCs' central banks more independent from their respective governments and other fiscal consideration (such as financing the budget deficits through money printing), would also constitute a contributing factor to the financial and macroeconomic stability in the Euro-MED region.

On the other hand, the enhancement/development of the domestic bond market should be made a priority to reduce regional financial instability and to tackle the existing public debt issues. SMCs' demonstrated financial vulnerabilities will continue to have a negative impact on the their financial sector and on the inflow of FDI, causing further downgrades of Morocco, Jordan, Lebanon and Tunisia's public debts with further hikes in interest rates.

Moreover, weak local bond markets in the 4 SMCs under investigation and the delays in implementing the required fiscal, monetary, and financial reforms which are urgently needed to foster macroeconomic and financial stability in the SMCs have slowed down any potential financial support from multilateral donors (IMF, EU and World Bank). This made it more difficult for Lebanon, Morocco, Jordan, and Tunisia to continue managing their public debt. Those reforms when timely implemented will help SMCs approach bilateral donors for further financial support and would also pave the way for better access to the EU's financial market and other EU funding opportunities like for instance the MFA assistance programs currently in place. In the absence of international funding and access to financial markets, the servicing of the public debt would become rather costly owing to rising interest rate differentials and the depreciation of the domestic currency—which would further exacerbate the current financial imbalances.

SMC's financial liberalization and financial integration with the EU should be implemented gradually because there is a need to ensure that proper institutional infrastructures such as strong prudential regulations and supervision are put in place in order to avoid any potential future financial crises. Unfortunately, these infrastructures were not in place when financial liberalization occurred in Morocco and Tunisia. Moreover, since implementing these reforms is a lengthy process, financial liberalization may have to be phased in gradually. Financial liberalization and globalization in themselves would not lead to financial crises in the SMCs. Rather, it is the mismanagement of these two processes that might lead to financial crises. However, emerging SMCs lack the institutions that can supervise and manage these two processes effectively.

Finally, and more importantly, and due to the accumulation of sizeable levels of debt in the 4 SMCs under investigation, and as was argued previously the access to the international financial market to bridge the gap between the selected SMCs' government expenditures and revenues through the issue of government bonds is becoming problematic. Thus, we propose in this study that the development of the local bond market will provide the needed financing for the 4 SMCs under investigation to reduce interest rates and to finance their budget deficits and their debts without resorting to the international financial market or the European market. This will also contribute to enhancing financial stability within the European-SMCs region and will reduce the probability of a debt crisis in the future. Therefore, the development of the domestic SMCs' bond market should be made a priority to tackle the existing public debt issues, to reduce regional financial instability, and to ensure new sources of funds to bridge SMCs' financing gaps.

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