What drives stock market development in Arab countries?

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Abstract: Arab stock exchanges have witnessed tremendous growth in recent decades, and the number of listed companies and the size of stock market capitalization have increased. In the light of this remarkable growth, this study aims to find out what are the most important determinants and economic factors affecting this development during the period 2006– 2017. By employing panel data models, we find that trade openness; market liquidity, money supply and economic growth have positive impacts on stock market development, whereas the global financial crisis has negative impact. Based on these results, measures should be taken to improve market liquidity, control of money supply, and maintain a balanced economic growth rate to promote the development of Arab stock exchanges. Policy recommendations are provided based on these findings.

Key words: Macroeconomic variables, Stock markets development, Arab Countries, Panel data analysis.

1. Introduction

Almost all analysts, academics and decision-makers agree on the fact that financial development, especially the development of stock markets, is essential to promote economic growth. Attention to stock markets comes within the framework of modern guidance led by international and regional organizations on enhancing the role devoted to such markets in the financial system of any country because financial markets provide one of the most important channels for mobilizing savings towards the most efficient and profitable economic sectors. (Murinde, 2012).

It is important to understand the relationship between macroeconomic factors and the stock market, because macroeconomic factors have a major impact on stock market performance and returns. Macroeconomic variables are part of the risk factors in stock markets (Chen et al.1986). The stock markets play a crucial role in any country's economic development. They are the intermediaries that ensure the flow of resources from surplus to deficit economic agents. They provide an institutional intermediation to mobilize money and efficiently channel it to profitable investments projects. Stock markets enable companies to raise funds for their investments and encourage savings by increasing the number of financial instruments and reducing risks with portfolio diversification. Thus, increasing savings and investment and efficiently allocating capital among investment opportunities promotes economic growth.

On the other hand, the subject of factors influencing the development of financial markets has attracted the attention of many academics and researchers. Studies have shown that a well-developed stock market contributes to economic growth by increasing capital accumulation and enabling better distribution of resources. Furthermore, most of the empirical research results indicate that equity markets play a key role in the growth and development of the economy. Many scholars and scientists have drawn the attention to the necessity of developing stock markets. Thus, most academic results indicate that stock markets have a key role to play in economic growth and development. Levine and Zervos (1998), Misati, (2007), McKinnon (1973).

There is no worldwide consensus on stock market development determinants. In other words, in the current empirical literature, there are no known specific variables or factors that may influence stock market development. For this reason, it is of paramount significance to search for key factors that determine the development of the stock market.

The Arab stock markets are completely immature, their economies witness a dominance of the banking sector over financial activity and a limited trading volume due to the, relatively, low number of listed companies, and these characteristics are widely shared in Arab countries. But if the market size and economy are proportional, it is possible to overcome the constraints of scale by promoting regional integration. Immediate reforms can be initiated, starting with improving banking services and establishing stronger legal structures and regulations and providing incentives for private companies to go public via the stock exchange.

Therefore, the aim of this article is to contribute to the literature review and to conduct a thorough empirical analysis of the Arab region stock markets. It serves to show the key determinants contributing to stock market development. It discusses the different factors and policies that lead to a better understanding of what drives the stock market growth in the Arab countries. In other terms, we try to answer the following question: what are the main macroeconomic determinants that affect the Arab stock market development?

2. Literature review

The empirical literature on the relationship between financial development and economic growth has grown considerably from the work of King and Levine (1993). However, it would be interesting to note that there is a radical divergence between the work devoted to the analysis of the link, finance and growth. Even though in their broad trend, most studies have concluded that there is a positive relationship between the two, nonetheless, some studies have provided evidence against this assertion.

As far as the macroeconomic determinants of stock market development are concerned, most investigations ascribe the main determinants of stock market capitalization to macroeconomic factors such as economic growth, investment rate, savings rate, development of financial intermediaries and stock market liquidity. Garcia and Liu (1999) found that real income, savings rate, brokerage growth, and Market liquidity are the most important variables influencing the stock market capitalization. They found that real income, savings, financial intermediary development and liquidity on the stock market are important predictors of market capitalization, whereas macroeconomic stability is not statistically significant. The results illustrate the differences in market capitalization in East Asia and Latin America and that the stock market is more sophisticated in East Asia. The results also

indicate that this is due to sustained economic growth, high savings rate, more liquid stock market, and more developed banking sector in East Asia.

Ben Naceur, Ghazouani and Omran (2007) studied the role of stock markets in boosting economic growth and shed some light on the macroeconomic determinants of stock market development. they discovered that the saving rate, financial intermediary, stock market liquidity were the main determinants of stock market development. Moreover, financial intermediaries and stock markets have been found to be complementary and not substitutes for growth. However, it was found that macroeconomic instability has a negative impact on stock market growth.

Aduda et al. (2012) investigated the determinants of the development of the Nairobi Stock Exchange. The results showed that macroeconomic factors such as liquidity on the stock market, institutional quality, per capita income, domestic savings and bank development were significant determinants of stock market development. However, the same results showed no significant relationship between stock market growth and macroeconomic stability, inflation and flows of private capital.

Abdelbaki, H. H. (2013), examined the macroeconomic determinants of the Bahraini stock market development by using an ARDL model. Monthly data was used, and the proxy of stock market development was stock market capitalization as a percentage of GDP. The results the study show that income level, domestic investment, banking system development, private capital flows, and stock market liquidity are the most important determinants of the Bahrain Stock Market development. The central bank policies and individual behavior influence banking development and financial system. For example, monetary policy relates to the stock market development by affecting money supply and investing activities in stocks.

Ho et al. (2017) provided a comprehensive literature review of the stock market growth determinants. Recent studies have been divided into quantitative and theoretical research. The studies, based on the empirical literature, found that stock market development determinants can be generally divided into two main groups: macroeconomic and institutional determinants. Theoretical as well as applied studies have shown in various ways how the stock market growth can be influenced by macroeconomic factors. Real income and its rate of growth promote stock market development, while the banking sector, interest rates and private net capital flows may reinforce or prevent it. Inflation and exchange rates have a negative impact on stock market development. The literature suggests in terms of institutional factors that different legal resources and incorporation of the stock market can have a positive or negative impact on the growth of the stock market. However, factors such as legal protection for investors, corporate governance, financial liberalization, and trade openness contribute positively to stock market growth.

The paper by (Sin-Yu et al, 2018) analyzes the macroeconomic determinants of the growth of the Philippines stock market during the period 2001 to 2016. Many macroeconomic factors were selected: inflation rate, exchange rate, development of the banking sector, economic growth, trade openness and stock market liquidity. An ARDL bound testing estimation was used. The findings showed that, in the long run, trade openness had a negative impact on the growth of the Philippine stock market, while in the short run, the banking sector development and the exchange rate had positive effects on Philippine stock market development.

As shown earlier, the financial system of Arab countries is less developed compared to other developing countries. Therefore, there is the need to investigate what actually determines stock market development in the Arab world. However, no empirical study could be found that did this. This study attempts to fill this gap by empirically investigating macroeconomic determinants of stock market development in ten Arab countries over the period 2006 to 2017.

3. Data and methodology :

To achieve the objective of our study, a panel of 10 Arab Stock markets was used. The period chosen is 2006-2017. The countries concerned are :UAE, Bahrain, Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia and Tunisia. From our literature review, we can say that the stock market development (SMD) model can be specified as follows:

$$SMD=f\,(TO, TR, BM, EG, FINCRIS)$$

Where:

SMD_{it}:It represents the dependent variable defined by market capitalization as a percentage of GDP. With i and t denoting the country and the time respectively. The other variables are the explanatory set of macroeconomic variables composed of trade openness, stock market liquidity, Broad money, economic growth and financial crisis.

3.1. Description of variables

Table 1 displays our variables definitions, proxies, and expected signs.

Where:

SMD	Represents the ratio: Stock market capitalisation / GDP. As a proxy for the stock market development.	Garcia and Liu (1999), Yartey (2010),Yartey(2008), Boukhatem (2009)
TO	Represents the trade openness rate, measured by the ratio Σ(Exports+Imports)/GDP. Here we expect that trade openness would have a positive impact on the development of the stock market.	El-Wassal (2005)
BM	Represents the money supply M3 to GDP. As a macroeconomic variable, the money supply is supposed to impact positively the stock market development.	Levine, Loayza, and Beck (2000), Beck, Demirgüç-Kunt, and Levine (2007)
TR	Represents the share turnover ratio, measured by the ratio of the total value traded to the total market capitalization. This variable depicts how easy or difficult it is to buy or sell shares in a given stock market. It measures the stock liquidity and a higher TR implies a more liquid stock. Hence, here again we expect a positive relation between	Garcia and Liu (1999), Yartey(2008), Billmeier and Massa(2009)

	this variable and SMD.	
EG	Represents the GDP growth. There is strong empirical evidence that a two-way positive causality relationship links Stock market development to economic growth. Hence why we expect a positive sign for this variable estimator.	Levine and Zervos (1998), Deb and Mukherjee (2008), Carp (2012).
FINCRIS	Dummy variable which takes a value of "1" during the financial crises years and "0" otherwise. A negative relationship between this explicative variable and SMD, is expected, because of the damage that a financial crisis can have on any economy.	As far as we know, previous studies have not attempted to determine impact the financial crisis on the SMD.

As we are going to study the determinants of the stock market development for 10 Arab countries and for a period of 12 years as stated above, we must opt for a panel data model.

Panel data models also called cross section time series–data models are a kind of econometric models that capture the behavior of the under-study unities across time. In general, we can express this kind of models as follows:

$$y_{it} = X'_{it}\beta_i + \alpha_i + \varepsilon_{it} \quad (2)$$

Where:

X is the explanatory variables matrix, y the dependent variable vector, α the intercept and ε the error term.

i refers to the ith unity under study, while t refers to the tth period.

Hence, as a consequence of what was said above, our model takes the following form:

$$SMD_{it} = \beta_0 + \beta_1 TO_{it} + \beta_2 TR_{it} + \beta_3 BM_{it} + \beta_4 EG_{it} + \beta_5 FINCRIS_{it} + \varepsilon_{it}$$

In this paper, and after testing the stationarity of our time series, we proceed as follows:

- We first estimate the pooled model which assumes, as stated above, that our model is the same for all the countries in the sample and this is done by simply pooling all the (N*T) observations into one sample and using an OLS regression.

- We, then, estimate the fixed effects model, which supposes that there is some heterogeneity between the countries under study.

- The next step is to choose between the two previous models using an F test.

- If the fixed effects model is chosen, we, then, estimate the random effects model and use the Hausman test to see which of these two models to adopt.

- Finally, we discuss the obtained results.

3.2 Data Sources

The data on Arab stock market are gathered from Arab Monetary Fund (AMF). The data on macroeconomic variables are collected from the World Bank World Development Indicators (WDI). The sample size is constrained by the availability of the data. Due to the recent emergence of most Arab stock exchanges, therefore, only the markets for which enough data were available were selected. We obtained a balanced panel of 10 stock markets spanning the period 2006–2017. Table 2 presents the list of the stock markets included in our sample.

Summary statistics of the variables:

Table (2)

Variable	Mean	SD	Max	Min
SMD	64.392	37.305	238.670	10.000
TO	103.035	33.946	192.000	30.200
TR	36.722	50.748	429.200	0.8000
BM	77.792	25.940	139.230	31.713
EG	4.403	4.286	26.170	-7.076
FINCRIS	0.850	0.358	1.000	0.000

From the above table and with reference to our data, we can see that the average of the market capitalization (SMD) is 64.4% and the maximum value is about 238.7% (for Jordan), whereas the minimum value is 10% (for Egypt) with a standard deviation of about 37.30 for the whole sample.We can note that the mean of turnover ratio is 36.72% with a standard deviation of 50.75 and a maximum value of 429.20% (for Saudi Arabia market) and a minimum value of 0.80% (for the Bahrain market).For the money supply M3 to GDP, the mean value is 77.79% with a standard deviation of 25.94, a maximum value of 139.23% (for Jordan) and a minimum of 31.71% (for Oman). The GDP growth rate, displays the following figures: a mean value 4.40%, a standard deviation of 4.28 a maximum value of 26.17% (for Qatar) and a minimum value of about -7.07% (for Kuwait).

Correlation Matrix

The following table shows the degree of partial correlation between the explanatory variables:

Table 3

	TO	TR	BM	FINCRIS	EG
TO	1				
TR	-0.2426	1			
BM	-0.0214	-0.2042	1		
FINCRIS	0.0169	-0.3101	0.1640	1	
EG	-0.0151	-0.0143	-0.2274	-0.3436	1

The above table shows that the correlation levels between the study variables are not very strong, which allows us to confirm the absence of any multicollinearity problem.

The series stationarity test:

In order to avoid spurious regressions, it's common to study the series stationarity before estimating the model.

There are many tests that are used when dealing with panel data series. As far as we are concerned in this paper, we opt for the Levin, Lin & Chu test, also known as LLC test. we summarize the obtained results as follows:

Table (4)

Variable	Statistic	Prob
SMD	-23.327	0.000
TO	-4.083	0.000
TR	-2.197	0.014
BM	-1.729	0.041
EG	-4.029	0.000

We can say that our series are stationary at level, i.e they are all I(0), which means that a short run relationship may exist and that there is no need to differentiate our variables.

Estimation of the model:

As mentioned in (Moundigbaye, Rea, and Reed, 2018), there are many different estimators, one can choose from, when dealing with panel data models. Depending on the specificities of the estimators one is looking for. As far as our paper is concerned, and with regard to the conclusions reached by Beck and Katz (1995) and Reed and Ye (2011), we opt for the Panel Corrected Standard Errors estimator (PCSE), because it guarantees obtaining estimators with an accurate confidence interval and a value for $\hat{\rho} <$ 0.30 (which means no error autocorrelation).

- The pooled model (Model 1): As mentioned above, this type of model assumes that the 10 countries are homogeneous and a multivariate regression model estimated by Ordinary Least Squares (OLS), can encompass all of them.

- The Fixed Effects model (Model 2): This model assumes that the 10 countries representing our sample are heterogeneous in the sense that they have some specific characteristics that are constant over time.

- The Random Effects model (Model 3): which assumes that the 10 countries under study have some specific characteristics that are random and may vary over time.

Table(5)

variables	Model 1	Model 2	Model 3
TO	0.332	0.458	0.398
TR	0.298 *	0.220	0.235
BM	0.744	0.837	0.813
EG	2.598	1.306	1.437
FINCRIS	-24.687	-36.157	-34.768
$\widehat{\beta_0}$	-29.168	-31.00	-25.342
R^2	0.495	0.789	0.541
TxN	120	120	120

(*) The values (.) represent the p-values of different estimators.

The next step, after the coefficient estimations, is to choose between the different models.

Table (6)

Correlated Random Effects - Hausman Test
Pool: ARAB
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.661235	5	0.0854

We have to accept the H_0 hypothesis, hence we conclude that the random effects model is more suitable for our study. i.e.

(*) The values (.) refer to the p-value of each estimator.

The random effects for each country are represented by the value of the intercept as follows:

$$SMD_{it} = -25.342 +0.39TO_{it} +0.23TR_{it} +0.81BM_{it} +1.43EG_{it} -34.768FINCRIS_{it} \quad (2)$$
$$(0.125)^* \quad (0.00) \quad (0.00) \quad (0.00) \quad (0.00) \quad (0.00)$$
$$R^2 = 0.541 \quad TxN=120$$

Table (7)

Country	Abud.	Jord.	Bah.	SAR	Kuw.	Mor.	Tun.	Oma.	Qat.	Egy.
$\widehat{\beta_0}$	**-28.89**	8.94	-2.74	9.95	26.69	-16.44	-25.59	10.53	**30.09**	-12.54

The above table shows that if we assign the same values to each of the explanatory variables

for all the stock markets under study, the Qatari stock market (with the highest value of $\hat{\beta}_0$)performs the best, while, in the same conditions the Abu Dhabi stock market has the worst performance.

Discussion of the results:

From the results above, we can see that all the coefficients –except the intercept- have a statistical significance (i.e. p-value of less than 5%), which means that all the explanatory variables included in our model have a significant impact on the dependent variable, SMD. Furthermore, we can see that –except the dummy variable representing the financial crisis (FINCRIS)– all the other variables, as expected, have a significant positive impact on the dependent variable. Even more, the value of the determination coefficient indicates that about 54% of variations in SMD can be explained by our explanatory variables. Taken altogether, we can assert that our 5 explanatory variables can be considered as determinants of the stock market development indicator and may be used as predictors of this dependent variable.

Turnover ratio which is the proxy of liquidity market is positively significant which is in line with: Greenwood and Smith (1997).

For the trade openness variable which is also positively associated with the stock market development; this result is similar to the findings of: Braun and Raddatz (2004), Vazakidis and Adamopoulos (2009), Niroomand et al. (2014).

Our results find that stock market liquidity is important for economic growth. Indeed, increased liquidity therefore facilitates investment in long-term projects with higher profitability and stimulates economic growth (Levine,1991).

Conclusion

Our paper is aimed at emphasizing the role of some selected macro-economic variables, represented by trade openness, stock market liquidity, Broad money, economic growth and financial crisis in explaining stock market development.

By using panel data estimation, we find that all variables have statistically significant positive effects on market capitalization as a proxy for stock market development. Whereas financial crisis has, as expected, a negative impact on the same dependent variable.

Henceforth, it is an urgent need for Arab governments and financial supervision bodies to start implementing appropriate policies that facilitate improving macroeconomic indicators which have a significant impact on stock market

development, to ensure the development of stock markets in Arab economies.

And as Arab stock exchanges tend to be small and fragmented, regional integration is an important factor, especially in terms of economies of scale, and it can contribute to increasing these financial markets efficiency and improving their performance and growth. Inter-Arab trade operations and investment flows, especially in the financial market sector, facilitate the creation of a competitive environment. And governments should improve the financial infrastructure in some Arab countries that endure a severe lack of access to financial services; in addition, they should strengthen the regulatory and supervisory capabilities of the securities bodies.

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