BANKING SECTOR, STOCK MARKET AND ECONOMIC GROWTH: EVIDENCE FROM MENA[1] COUNTRIES

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Abstract

Stock market and banking sector has a key role in economic development in each country. Therefore in this paper, using data related to the Middle East and North Africa in the period 1990-2011, the role and importance of stock market and the banking sector on improving production have been studied with panel data. First, stationary of variables has been tested, and then cointegration of model variables has been surveyed with Kao panel data cointegration test. Study results show that the banking sector has positive and significant effect on countries production. One percent increase in domestic credits granted to the private sector, as a symbol of the banking sector development, causes production levels increase between 0.10 - 0.142 percent. But in this period, the stock market significant effect on the production level is not considered.

Keywords: banking Sector, Stock market, Economic growth, Panel cointegration, MENA countries

JEL Classification: O40, O50, G21, C32

1. Introduction

This idea that financial development promotes economic growth, for the first time presented by Schumpeter in early 1911 and followed by other economists to empirically examine this relationship. They find that the financial development is necessary condition to achieve high rate of economic growth (Goldsmith, 1969, McKinnon, 1973 and Shaw, 1973). In future experimental studies, the relationship between financial markets and economic growth mainly through inter-country growth regression confirmed. Results of this studies show that development of

[1] Middle East and North Africa-The sample countries are Egypt, Islamic Republic of Iran, Jordan, Malta, Morocco, Oman, Saudi Arabia, united Arab emirates, Tunisia, Lebanon, Kuwait.

stock markets and banking system has improved economic growth.

In total, there are at least four channels through it developed financial system can be involved in economic growth. The first, as mentioned, are financial intermediaries that can reduce the cost of collecting and processing information to improve resource allocation(Boyd and Prescott 1986).in second case, reducing information cost , decrease banks and companies administrative cost and through them, these institutions reduce credit quoting and the rationing of credit that lead to accelerate economic growth(Smith and Bencivenga,1993). Also, financial intermediates and markets provide suitable tools to exchange, participation and diversification of risk that allow to economic agents to diversify portfolio with various types of risky assets. Therefore, people will guidance to the projects that have high expected returns and have a positive effect on economic growth process (Greenwood and Jovanovic, 1990, Gurley and Shaw, 1955). In The fourth channel, the financial system can encourage savings and provide attractive tools for saving, will have the strong effect on economic development. Considering the role of financial markets (especially stock markets and banks) in the economic development, it can be argued that which of them have greatest role in the economic growth? The purpose of this paper will be study the banking sector and stock market impact on economic growth in MENA countries, separately.

2. An overview of the literature

in the literature, there are several time series evidence, relating to a particular country, and cross-country studies. Most of these studies show that stock markets and banks have the positive effects on economy. Although some studies doubt about the effect of stock markets and banks on economic growth and have ambiguous results. Goldsmith (1969) showed a positive correlation between financial system development and economic growth. Atje and Jovanovic (1993) using data on 40 countries in the period 1980-1988, found that the stock market (total traded shares divided by GDP) impact on economic growth was significant, but no such effect for loans and credit. Levine (1997) supports the view that stock markets by improving liquidity conditions and reducing investment risk will increase economic growth. In another study, Levine and Zervos (1998) examined the relationship between economic growth and financial markets and banks for 48 countries in the period 1976-1993. They found that both stock market and banking sector development have a positive effect on economic growth. They also considered the banking sector and stock market as a single, and conclude that both banks and stock markets in economic development process play significant role in economic growth, separately.

Rousseau and Wachtel(2000), use panel data approach and data on 47 countries on 1980-1995, to assess the role of stock markets and banks on economic growth and concluded that the development of the banking sector and stock market lead to Economic growth . Contrary to these studies, Ram (1999) concludes that, for both developed and developing countries, the relationship between financial development and growth is negative or negligible. like this study, Dawson (2003) to be created more doubts against conventional view that financial development causes economic growth in the minds for Central and Eastern European countries. In another study, Arestis et al. (2001) using data from five developing countries concluded that both stock markets and banks in these countries affect on economic growth. They also found that the effects of the banking sector on economic growth are far greater than the effects of stock markets. Van Nieuwerburgh et al (2006) also examine the long-term relationship between financial development and economic growth in Belgium and found strong evidence that shows stock markets development affect economic growth in Belgium, particularly in the period 1873-1914. Beck and Levine (2004) using panel data and GMM estimation methods in the period 1976-1998, found that stock markets and banks has positive effects on economic growth.

Enisan and Olufisayo (2009) in their article titled "Stock Market Development and Economic Growth: Evidence from seven sub-Saharan African countries", review the long-term causal relationship between stock market development and economic growth in seven African countries. In this study, the authors conclude that stock market development has significant and positive effects on economic growth. Cooray(2010) also using the Mankiw, Romer and Weil (1992) generalized model and data for 35 countries to examine the effect of stock market in economic growth in developing countries and conclude that the size and liquidity of stock market promoted economic growth.

3. Model Specification

Following Cooray (2010), we consider Mankiw,Romer and Weil (1992) growth model that include stock market and banking sector.

$$Y(t) = K(t)^{\eta} H(t)^{\beta} S(t)^{\nu} B(t)^{\rho} [A(t)L(t)]^{1-\eta-\beta-\nu-\rho} \qquad (1-3)$$

Where $Y(t)$ is the level of production, $K(t)$ physical capital, $H(t)$ human capital, $S(t)$ stock market variable, $L(t)$ labor force, $B(t)$ banking sector variable and $A(t)$ the level of technology. Taking the natural logarithm of equation (4-1), equation (4-2) is obtained.

$$LnY(t) = \eta LnK(t) + \beta LnH(t) + \nu LnS(t) + \rho LnB(t) + (1-\eta-\beta-\nu-\rho)Ln\left[L(t)A(t)\right] \qquad (2-3)$$

By Adding a random component to the equation (4-2) with this assumption that $\alpha = (1-\eta-\beta-\nu-\rho)LnA(t)$, equation (4-3) is obtained.

$$LnY(t) = \alpha + \eta LnK(t) + \beta LnH(t) + \nu LnS(t) + \rho LnB(t) + (1-\eta-\beta-\nu-\rho)LnL(t) + U(t) \qquad (3-3)$$

Since, this equation to be estimated by cross- country data, the estimated equation is as follows.

$$Ln(Y)_{i,t} = \alpha_i + \eta Ln(K)_{i,t} + \beta Ln(H)_{i,t} + \nu Ln(S)_{i,t} + \rho Ln(B)_{i,t} + (1-\eta-\beta-\nu-\rho)(L)_{i,t} + U_{i,t} \qquad (4-3)$$

Where i Index denote the number of country ($i = 1-12$) and t is the data set period ($t = 1990-2011$). $U_{i,t}$ Was error term that include the country effects (μ_i), time effects (λ_t) and disturbance term of the equation ($\varepsilon_{i,t}$). That is $U_{i,t} = \varepsilon_{i,t} + \lambda_t + \mu_i$.

4. Data and Methods

In this article, 11 countries from Middle East and North Africa considered for 1990 - 2011 period and the final model is estimated using panel data approach. In this model, variables are defined as below:

$Y(t)$: Natural logarithm of each country's GDP (constant 2000 US$)

$K(t)$: Natural Logarithm of gross capital formation.

$H(t)$: Natural logarithm of educational expenditure as a percentage of GDP

$L(t)$: Natural Logarithm of labor force

$S(t)$: stock market variable that comes with the following variables in the model.

- The stock market liquidity (ML), which equals to the total value of traded shares divided by GDP in domestic price.
- The stock market turnover (MT) or total value of traded shares divided by the total value of shares in domestic price.
- The stock market capitalization (MC) that shown stock market size and defined as value of all listed companies in domestic prices to the country's GDP.

$B(t)$: banking sector variable that measured by natural logarithm of Domestic credit granted to private sector as index of banking sector development.

Before estimating the model, we should ensure that the model variables are stationary. To this end, used conversional unit root tests. Some of these tests

reported in E-views software. The results of unit root test can summarized the as follow in Table1.

Table 1: Results of variables stationary

situation	variable	level	First difference
Individual intercept	Gross Domestic Product(GDP)	Non Stationary	Stationary
Individual intercept	Capital stock	Non Stationary	Stationary
Individual intercept	Labor Force	Stationary	-
Individual intercept	Education Expenditure	Non Stationary	Stationary
Individual intercept	Stock market capitalization	Stationary	-
Individual intercept	Stock market liquidity	Stationary	-
Individual intercept	Market turnover	Stationary	-
Individual intercept	Domestic credits granted to private sector	Stationary	-

Source: author's calculations

Can be seen that the GDP, capital stock and education expenditure are not stationary in variable level. GDP, capital stock and education expenditure stationary on variable first differences. In other words mentioned variables have unit root. Other variables in the model are stationary. Hence, the model variables should be sure to cointegration. If the model variables being cointegrated, a long-run relationship between the dependent variable and independent variables in the model is there. In this study, to ensure cointegraion of variables, Kao panel cointegration test (1999) is used.

Kao test is largely similar to Pedroni(1999) test. Kao in his article (1999), propose two tests under the null hypothesis that there is no cointegration between model variables. One of these tests is Dickey- Fuller test type and other one is augmented Dickey-Fuller test type Fuller. Kao considers the two-variable model as follow

$$Y_{it} = \alpha_i + \beta X_{it} + e_{it} \qquad t = 1, \ldots, T \quad , \quad i = 1, \ldots N \qquad (1-6)$$

Where $Y_{i,t} = Y_{i,t-1} + u_{it}$. α_i's are Fixed effects that change between sections, β is slope parameter and X_{it} and Y_{it} for all i are independent random walks. Kao estimates auxiliary regression as (2-6) or in augmented form (3-6)

$$e_{i,t} = \rho e_{i,t-1} + v_{it} \qquad (2-6)$$

$$e_{i,t} = \tilde{\rho} e_{i,t-1} + \sum_{j=1}^{p} \psi_j \Delta e_{i,t-j} + v_{it} \qquad (3-6)$$

Kao under the null hypothesis that there is no cointegration between model variable, suggest four test statistics

$$DF_{\rho} = \frac{\sqrt{NT}(\hat{\rho}-1)+3\sqrt{N}}{\sqrt{10.2}} \qquad (4-6)$$

$$DF^{*}{}_{\rho} = \frac{\sqrt{NT}(\hat{\rho}-1)+3\sqrt{N}\hat{\sigma}_{v}^{2}/\hat{\sigma}_{0v}^{2}}{\sqrt{3+36\hat{\sigma}_{v}^{4}/(5\hat{\sigma}_{0v}^{4})}} \qquad (5-6)$$

$$DF_{t} = \sqrt{1.25t_{\rho}} + \sqrt{1.875N} \qquad (6-6)$$

$$DF^{*}{}_{t} = \frac{t_{\rho}+\sqrt{6N}\hat{\sigma}_{v}/2\hat{\sigma}_{0v}}{\sqrt{\hat{\sigma}_{0v}^{2}/(2\hat{\sigma}_{v}^{2})+3\hat{\sigma}_{v}^{2}/(10\hat{\sigma}_{0v}^{2})}} \qquad (7-6)$$

For $\rho \succ 0$, that is augmented case present this test statistics

$$ADF = \frac{t_{ADF} + \sqrt{6N}\hat{\sigma}_{v}/(2\hat{\sigma}_{0v})}{\sqrt{\hat{\sigma}_{0v}^{2}/(2\hat{\sigma}_{v}^{2}) + 3\hat{\sigma}_{v}^{2}/(10\hat{\sigma}_{0v}^{2})}} \qquad (8-6)$$

All these statistics have asymptotic normal distribution, where estimated variance was $\hat{\sigma}_{v}^{2} = \hat{\sigma}_{u}^{2} - \hat{\sigma}_{u\varepsilon}^{2}\sigma_{\varepsilon}^{-2}$ and long-run variance is $\hat{\sigma}_{0v}^{2} = \hat{\sigma}_{0u}^{2} - \hat{\sigma}_{0u\varepsilon}^{2}\sigma_{0\varepsilon}^{-2}$.

In this section, seven models have been estimated with panel data. Kao Panel cointegration test results of these models are presented in Table 2.

Table 2: Kao Panel cointegration test results

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**
ADF Statistics	-2.35* (0.00)	-3.04* (0.00)	-2.348* (0.00)	-2.07* (0.01)	-2.44* (0.01)	-2.28* (0.01)	-2.12* (0.01)

A * indicates the rejection of the null hypothesis of no cointegration on the 0.01 level of significance.

The results, shows that in all models, at 1 percent significant level, null hypothesis of no cointegration in the models can be rejected. Now that we sure about variables are cointegrated, we can use the variables level in models.

Models can be estimated as Pooled data or Panel data. Leamer F test is used to detect it. This test supposes that model should be estimated as Pooled data. This test was performed in E-views software and the results are presented in table 3. If panel data approach accepted, in the second step, should be to determine which method is suitable (fixed effects or random effects) to estimate the Panel data. In this stage, the Housman test (1980) used. Housman test examine the null

hypothesis that random effects is suitable for model estimation. If the null hypothesis rejected, fixed effects methods are used. The results of this test show in the table 3. It should be noted that due to the model's logarithmic form, we can say that the coefficient of each variable, is elasticity of them. That is, if these variables change 1 percent, the dependent variable of model will change equal to this variable's coefficient.

Table 3: models estimation results(dependent variable: Gross Domestic Product)

variables	Model1	Model2	Model3	Model4	Model5	Model6	Model7
c	7.49 (13.94)*	7.76 (20.4)*	8.6 (14)*	7.54 (14.37)*	7.53 (14.89)*	8.29 (14.2)*	8.61 (13.29)*
Ln(K)	0.13 (4.68)*	0.12 (4.18)*	0.127 (4.65)**	0.125 (3.75)*	0.135 (4.14)*	0.146 (4.52)*	0.121 (3.71)*
Ln(L)	0.52 (10.92)*	0.497 (10.35)*	0.466 (10.33)*	0.527 (11.07)*	0.51 (10.52)*	0.445 (10.66)*	0.467 (10.57)*
Ln(EDU)	0.258 (11.11)*	0.28 (11.84)*	0.27 (13.98)*	0.258 (11.1)*	0.26 (10.86)*	0.287 (13.77)*	0.281 (14.29)*
Ln(MC)	0.00033 (0.96)	-	0.016 (2.85)*	-	-	-	
Ln(MT)	-	-	-	-	0.0008 (0.91)	0.0005 (0.94)	-
Ln(ML)	-	-	-	0.0016 (0.72)	-	-	0.0077 (1.66)
Ln(DC)	0.134 (5.21)*	0.10 (3.11)*	-	0.142 (5.22)*	0.14 (5.3)*	-	-
R^2	0.92	0.92	0.91	0.92	0.92	0.914	0.915
Leamer F test	301.77 (0.00)**	288.34 (0.00)**	259.8 (0.00)**	312.29 (0.00)**	305.17 (0.00)**	263.45 (0.00)**	301.77 (0.00)**
Housman Test	0 (1.00) ***	0 (1.00) ***	0 (1.00) ***	0 (1.00) ***	0 (1.00) ***	0 (1.00)***	0 (1.00) ***

A * indicates the significance of variables at least on the 0.01 level.
A ** indicates the rejection of the null hypothesis on the 0.01 level of significance.
A *** indicates that null hypothesis not be rejected on the 0.01 level of significance.

In all models, the leamer F test reject null hypothesis .therefore these models can be estimated as the panel data. Also, Housman Test results show that we can't reject null hypothesis and we should estimate all models as random effects. Model estimation results are presented in table 3. These results show that in these models, all variables, excluding variables related to the stock market, are significant at 1 percent confidence level and have expected signs.

The models results show that capital stock coefficient is estimated at about "0.12 to 0.145". Since the models are in logarithmic form, so we conclude that if capital stock change 1 percent and all other conditions remain constant, production levels will change "0.12 to 0.145" percent . The estimated coefficient of the labor force is about "0.445 to 0.527". This indicate that the elasticity of labor in these countries, is between "0.445-0.527" and by changing labor force as 1 percent, production levels will change "0.445 to 0.527" percent, if other conditions remain constant.

The estimation results indicate that the banking sector has a positive impact on economic growth. The estimated coefficient of banking sector varies between "0.10 to 0.142" and therefore the banking sector output elasticity is "0.1-0.142". also, human capital have positive impact on production level in these countries, so that by increasing human capital as 1 percent, the production level has changed "0.258 to 0.287" percent, if other conditions remain constant.

As is clear from the results of the estimation, variables related to the stock market, with the exception of Model 3, are not significant. Also, in Model 3, the stock market effects on production levels in considered countries are small (about 0.016). It can be said that the stock market has no significant role in enhancing production for these countries in considered period.

5. Summary and Concluding Remarks

Efficient financial markets by providing liquidity and reducing transaction costs to firms, and optimal resource allocation to the defined sector, increase investment actions in the economy and through multiple channels, improve production levels and economic growth. Numerous studies have been concluded that stock markets and the banking sector have positive effect on level of production and economic growth.

In this article, 11 countries from Middle East and North Africa selected for 1990-2011 time period. Using multiple indicators for the stock market and banking sector and using panel data estimation methods, different models was estimated.
The leamer F test values in all models reject the null hypothesis of Pooled data estimation. Also, the null hypothesis of Housman test not rejected. On the other hand, models should be estimated as random effects.

Models estimation results showed that for considered countries, the banking sector in these countries have positive and statistically significant effect on

production levels. If all other conditions remain constant, by 1 percent change in banking sector variable, production level has changed "0.1-0.142" percent. In contrast, for the considered countries, the stock market has no significant role in enhancing production levels.

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