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Reviewing the Equilibrium and Causal Relationships between Stock Market Development and Economic Growth in Jordan

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Abstract

The relationship between stock market development and economic growth has been diversely investigated by many researchers. This paper investigates the equilibrium and causal relationships between stock market development and economic growth in Jordan for the 1980-2018 period. It employs the ARDL approach and the results show evidence of a co-integration and causal relationships between variables. These results are broadly consistent with similar studies carried out for other developing economies.

Keywords: international finance, ARDL approach, stock market development, economic growth, Jordan

1. Introduction

It is well documented that financial part is an important engine to economic growth, due to its ability to convert the idle savings in the economy into useful and productive capital. The pioneering work of Schumpeter (1911), McKinnon (1973), and Shaw (1973) identified the causal relationships between financial sector development and economic growth. A large body of literature examined the causal and equilibrium relationships between stock market development as a subsector of financial sector and economic growth (see for example Aktas et al., 2019; Azam et al., 2016; Enisan & Olufisayo, 2009; Fufa & Kim, 2018; Nieuwerburgh et al., 2006; Pan & Mishra, 2019; Pradhan et al., 2015; Pradhan et al., 2014; Yang, 2018). Liquidity shaped by the stock markets makes investment less risky and provides long-term capital to companies. A highly liquid stock market decreases the level of uncertainty associated with investing in stock market, which makes investment more attractive for investors.

The 'supply leading' role means that financial development is contributing to economic growth through several channels: (i) efficient allocation of capital as the share of financial saving in total wealth rises, (ii) enrollment of savings by providing attractive instruments and saving vehicles, (iii) provision of vehicles for trading, pooling and diversifying risk, (iv) lowering of cost of gathering and processing information and thereby improve the allocation of resources and (v) increased specialization in production, development of entrepreneurship and adoption of new technology. In short, it is argued that the existence of a well-functioning financial sector will support in the limited resources from the surplus units to the deficit units thereby promoting efficient allocation of resources and thus lead other economic sectors in their growth course.

In compare, is the view called 'demand following' argument. According to this view, financial development is viewed as the handmaiden of economic development, reacting passively to the demand for financial services by a growing economy (Robinson, 1952; Romer, 1990; Stem, 1989). The development in the financial sector is eased by growth in the real sector of the economy. The argument is that high economic growth forms demand for certain financial instruments and arrangements and that financial markets effectively respond to these demands and changes.

The third view called 'feedback' hypothesis suggests a two-way relationship between financial development and economic growth, with the nature of the relationship depending on the stage of economic development. The followers of the model assert that a country with a well-developed financial system could stimulate high economic expansion through technological changes, product and services innovation (Schumpeter, 1911). In turn,

this economic expansion will create high demand on the financial arrangements and services (Levine, 1997). However, as the financial institutions effectively respond to these demands, then these changes will stimulate a higher economic growth. In short, both financial development and economic growth are positively interdependent and their relationship could lead to feedback causality (Luintel & Khan, 1999).

2. Literature Review

Azam et al. (2016) examined the role of stock markets in economic growth for four Asian countries (i.e., Bangladesh, India, China, and Singapore). They employed annual time-series data for the 1991-2012 period and ARDL approach. The results showed evidence of a co-integration status between stock market development and economic growth in the four Asian countries.

Enisan and Olufisayo (2009) examined the equilibrium and causal relationships between stock market development and economic growth for seven countries in sub-Saharan Africa (i.e., Egypt, Cote D'Ivoire, Kenya, Morocco, Nigeria, South Africa, and Zimbabwe). The paper employed autoregressive distributed lag (ARDL) approach and vector error correction model (VECM). The results showed that stock market development was co-integrated with economic growth in Egypt and South Africa. Moreover, stock market development had a significant positive long run impact on economic growth. Granger causality test based on VECM further showed that stock market development Granger caused economic growth in Egypt and South Africa. However, Granger causality in the context of vector autoregressive (VAR) model showed evidence of bidirectional relationship between stock market development and economic growth for Cote D'Ivoire, Kenya, Morocco, and Zimbabwe. In Nigeria, there was a weak evidence of growth-led finance using market size as indicator of stock market development.

Fufa and Kim (2018) investigated the link among stock markets, banks, and economic growth in European countries using generalized method of moments (GMM). The results indicated that the link between financial development and economic growth depends on the stages of economic growth of countries. Nieuwerburgh et al. (2006) examined the long-term relationship between financial market development and economic growth in Belgium. The results showed that stock market development caused economic growth in Belgium, especially in the period between 1873-1935.

Pan and Mishra (2019) investigated the relationship between stock market development and economic growth in China using ARDL approach. The results of the analysis showed that the global financial crisis from 2007 to 2012 had a significant impact on stock market and the Chinese economy. Furthermore, the results indicated that Shanghai share market had a long-run negative association with the Chinese economy.

Pradhan et al. (2014) examined the relationship among banking sector development, stock market development, economic growth, and four other macroeconomic variables in ASEAN countries for the period 1961–2012. The study employed principal component analysis and a panel vector auto-regressive model for testing the Granger causalities. The results showed the presence of both unidirectional and bidirectional causality links among these variables. Pradhan et al. (2015) investigated co-integration relationships and Granger causality among economic growth, inflation, and stock market development. The study employed a panel vector autoregressive model in 34 OECD countries over the time period of 1960-2012. The results showed evidence of causal links among the variables in the short run and in the long run.

3. Data and model

Annual time series data is collected for the 1980-2018 period from the World Bank https://data.worldbank.org/country/jordan. However, the general form of the model is specified as follows:

$$SMD = f(GDP) \tag{1}$$

Where SMD is the stock market development (dependent variable) and GDP is economic growth (independent variable). To investigate equilibrium and causal relationships between SMD and GDP, several steps of the methodology are used. The current paper employs Augmented Dickey-Fuller (ADF) statistics test to detect the level of stationarity either at *I(0), I(1)* or *I(d)*. Before processing ARDL approach, it needs to ensure that the variables are not *I(2)* stationary level to avoid spurious results (Pesaran et al., 2001). In addition, Pesaran et al. (2001) developed bounds testing approach and argued that the long-run equilibrium relationships could be estimated based on standard F-statistics tests and the short-run relationship can be directly estimated. The ARDL approach can be written as in *Eq. (2)*:

$$\begin{aligned}\Delta \mathrm{LogSMD}_t = {} & \alpha_0 + \alpha_{1t}\mathrm{LogSMD}_{t-1} + \alpha_{2t}\mathrm{LogGDP}_{t-1} \\ & + \sum_{s=1}^{h} \alpha_{3s}\Delta \mathrm{LogSMD}_{t-s} + \sum_{s=0}^{h} \alpha_{4s}\Delta \mathrm{LogGDP}_{t-s} + \varepsilon_t\end{aligned} \tag{2}$$

Where Δ is the first difference operator; Log is the natural logarithmic form; α_0 is the intercept term; α_1 and α_2 are the long-run coefficients; α_3 and α_4 are the short-run coefficients; ε_t is the error term.

4. Results analysis

Table 1 shows that the variables are stationary at the first difference (i.e., *I(1)*). Therefore, the ARDL approach is used to estimate equilibrium and causal relationships between variables. Table 2 shows the results of co-integration test. The calculated F-statistics value (6.20) is higher than the upper bound (4.855) at 5% significance level, showing a co-integration and causal relationship between stock market development and economic growth.

Table 1. Results of ADF test

Variable	t-statistic		Critical-value		
	I(0)	I(1)	1%	5%	10%
$LogSMD_t$	-1.35	-5.15*			
$LogGDP_t$	-2.28	-3.30***	-4.20	-3.52	-3.19

Note. (1) *, **, *** represent the significance at 1%, 5%, and 10% levels, respectively. (2) The analysis of unit root test is conducted using Augmented Dickey-Fuller (ADF) test. (3) Source: Author's estimations using E-views software package 9.0.

Table 2. Results of Co-integration test

Empirical model	Calculated F-statistics value	Tabulated F-statistics values					
		1%		5%		10%	
$LogSMD_t = f\ (LogGDP_t)$.	6.20**	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)
		6.309	5.288	4.855	3.793	4.126	3.182

Note. (1) The tabulated F-statistics values were retrieved from Pesaran and Pesaran (2009, Case II: intercept and no trend, p. 544). (2) ** denotes the significance at 5% level. (3) The computed F-statistic value was obtained from Micro−Fit software package 5.1.

Once co-integration is well-known, the next step is to estimate equilibrium relationships between variables (Mugableh, 2019a; Mugableh, 2019b). In Table 3, the long-run and short-run results show that economic growth has positive impact on stock market development.

Table 3. ARDL estimation results

Variable	Coefficient
Constant term	-2.501 (0.596)
Long-run:	
$LogGDP_{t-1}$	7.132* (0.01)
Short-run:	
$\Delta LogGDP_{t-1}$	3.126** (0.03)

Note. (1) P-values in parentheses. (2) *, **, *** represent 1%, 5%, and 10% levels of significance, respectively. (3) Source: Author's estimations using E-views software package 9.0.

5. Concluding Remarks

This study investigates equilibrium and causal relationships between stock market development and economic growth in Jordan for the 1980-2018 period. The results of the ADF test show that stock market development and economic growth are stationary at *I(I)*. The results of the ARDL approach indicate that stock market development and economic growth are co-integrated. In addition, economic growth has positive impact on stock market development in long-run and short-run. Moreover, there is a two-way causal relationship between stock market development and economic growth, asserting that a country with a well-developed financial system could promote high economic expansion through technological changes, product, and services innovation.

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