



$$[ \dots, -(1, -1, -1)] = 0 \quad \geq 2; = 3, \dots \quad (3)$$

$$[ \dots, -(2, -2, -1)] = 0 \quad \geq 2; = 3, \dots \quad (4)$$

$$[ \dots, -(2, -2, -1)] = 0 \quad \geq 2; = 3, \dots \quad (5)$$

Further, Sagarn Test and Serial Correlation Test were conducted to check the validity of the instruments and the presence of the serial correlation respectively.

### Result and Discussion

According to the model 01 explained in the table 01, stock market development positively and significantly linked with the economic growth rate. Hence, it confirms that stock market development stimulates the economic growth of emerging economies. The result is consistent with Levine and Zervos (1998), Beck and Levine (2004), and Yuncu (2007). Further, the results also indicate the lag of the real GDP, labor, openness and per capita income also positively and significantly affect the economic growth. In contrast, the model 02 captures the impact of economic growth on stock market development (The reverse causality) by employing stock market development as dependent variable. According to the results, economic growth does not significantly affect stock market development in emerging markets.

Table 01: Results of GMM Dynamic Panel Data Analysis for Emerging Markets

Model 01		Model 02	
Dependent Variable : Log of Real GDP		Dependent Variable : Stock Market Develop	
Estimation Technique : Panel GMM – 2SLS		Estimation Technique : Panel GMM – 2SLS	
Observations : 118		Observation : 118	
Variable	Coefficients	Variables	Coefficients
Log of Real GDP(-1)	0.4795*** (7.0721)	Stock Market Develop(-1)	0.4424* (1.7208)
Stock Market Develop.	0.0209*** (3.8504)	Log of Real GDP	-0.0798 (-0.0358)
Log of Capital	0.0212 (0.4892)	Log of Capital	-0.1737 (-0.1371)
Log of Labor	0.3794** (2.5662)	Log of Labor	3.4266 (0.8847)
Log of Openness	0.1954*** (4.6105)	Log of Openness	-0.0951 (-0.0873)
Log of Per Capita Income	0.2343*** (6.3811)	Log of Per Capita Income	0.1717 (0.1372)
Log of Inflation	0.0010 (0.1660)	Log of Inflation	-0.0015 (-0.0153)
Economic Crisis	-0.0172** (-2.2108)	Economic Crisis	-0.3492** (-2.1199)
Instrument rank	32.0000	Instrument rank	27.0000
J-statistic	25.0809	J-statistic	22.87102
Sargan Test (P – Value) <sup>1</sup>	0.4013	Sargan Test (P – Value) <sup>1</sup>	0.2430
Serial Correl. (P – Value) <sup>2</sup>	0.6031	Serial Correl. (P – Value) <sup>2</sup>	0.2920

Source: Author’s Calculation based on the World Bank Data

<sup>1</sup>Sargan Test has the null hypothesis that the over-identifying restrictions are valid.

<sup>2</sup>Serial Correlation Test has the null hypothesis of error terms are not serially correlated.

\*\*\* - Significant at 1% \*\* - Significant at 5% \* - Significant at 10%

As model 03 summarized in the table 2, all the regressors except economic crisis positively link with the economic growth of countries with developed markets. Particularly, stock market development is positive and statistically significant highlighting presence of Finance Led Growth Hypothesis. These results for developed markets are also consistent with the cross-country and panel data analysis by Levine and Zervos (1998) and Beck and Levine (2004).

Table 02: Results of GMM Dynamic Panel Data Analysis for Developed Markets

Model 03		Model 04	
Dependent Variable : Log of Real GDP		Dependent Variable : Stock Market Devel.	
Estimation Technique : Panel GMM – 2SLS		Estimation Technique : Panel GMM – 2SLS	
Observations : 106		Observation : 106	
Variable	Coefficients	Variables	Coefficients
Log of Real GDP(-1)	0.5309*** (3.6861)	Stock Market Develop.(-1)	-0.2429 (-0.8808)
Stock Market Develop.	0.0269** (2.0944)	Log of Real GDP	9.4366*** (2.8656)
Log of Capital	0.0032 (0.0570)	Log of Capital	2.2623** (2.2130)
Log of Labor	0.4017 (1.3172)	Log of Labor	-5.4799 (-1.0144)
Log of Openness	0.0917** (2.1278)	Log of Openness	0.8908 (1.1064)
Log of Per Capita Income	0.0608** (2.4210)	Log of Per Capita Income	1.2299** (2.1979)
Log of Inflation	0.0007 (0.2242)	Log of Inflation	-0.1831* (-1.9228)
Economic Crisis	-0.0198*** (-3.8772)	Economic Crisis	-0.0035 (-0.0408)
Instrument rank	31.0000	Instrument rank	26.0000
J-statistic	15.9511	J-statistic	11.0382
Sargan Test (P – Value) <sup>1</sup>	0.8573	Sargan Test (P – Value) <sup>1</sup>	0.8927
Serial Correl. (P – Value) <sup>2</sup>	0.0991	Serial Correl. (P – Value) <sup>2</sup>	0.8070

Source: Author's Calculation based on the World Bank Data

<sup>1</sup>Sargan Test has the null hypothesis that the over-identifying restrictions are valid.

<sup>2</sup>Serial Correlation Test has the null hypothesis of error terms are not serially correlated.

\*\*\* - Significant at 1% \*\* - Significant at 5% \* - Significant at 10%

The model 4 which investigates the reverse causality between economic growth and stock marketed development stressed that economic growth of developed economies affects the stock market development. The results are consistence with Robinson (1952), Patrick (1966), Ireland (1994), Dritskai and Melina (2005) and Capasso (2006) who have confirmed the Growth – led Finance Hypothesis. In fact, the higher economic performances and expansion of the industrial and service sectors in developed economies essentially create a higher demand for financial assets which ensures the development of stock markets as well.

## **Conclusions**

The empirical findings proved the long run relationship between stock market development and economic growth. Further, GMM estimations confirmed that stock market development promotes the economic growth of both emerging and developed markets. However, the direction of the causality in emerging market differs from the developed markets. Emerging markets account for only uni-directional causality which runs from stock market development to economic growth supporting the Finance Led Growth Hypothesis. In contrast, developed markets support for both Finance Led Growth and Growth Led Finance Hypotheses reflecting the bi-directional causality between stock market and economic growth. Ultimately, study recommends promoting stock market activities in order to stimulate the economic growth of both developed and emerging markets.

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