

WHAT ARE THE DETERMINANTS OF STOCK MARKET DEVELOPMENT IN EMERGING MARKETS?

Kunofiwa Tsauroi, University of South Africa

ABSTRACT

The current study explored the determinants of stock market development in emerging markets using the pooled ordinary least squares (OLS), fixed and random effects approaches with data ranging from 1994 to 2014. Emerging markets studied in this paper include Argentina, Brazil, Colombia, Mexico, Peru, Czech Republic, Greece, Poland, Portugal, Russia, Turkey, China, Hong Kong, Indonesia, India, Malaysia, Philippines, Republic of Korea, Thailand, Singapore and South Africa. The major factors influencing stock market development in line with empirical literature included FDI, economic growth, infrastructural development, savings, inflation, trade openness, exchange rates, banking sector development and stock market liquidity. The impact of these factors on stock market development in emerging markets was then tested using an empirical model (Equation 2). FDI, savings, economic growth, trade openness, exchange rates, banking sector development and stock market liquidity to a larger extent had a positive impact on stock market development in emerging markets. Majority of the findings on the determinants of stock market development resonate with theoretical literature (Table 4). The current study therefore urges emerging markets to implement policies that accelerate economic growth, FDI, banking sector development, savings, trade openness and stock market liquidity in order to enhance their stock market development. Future studies should take into account the dynamic nature of stock market development data. They should also address the endogeneity problem that normally characterise the relationship between stock market development and its determinants.

Keywords: Stock Market Growth, Determinants, Emerging Markets.

INTRODUCTION

The role played by financial development, in particular stock market in boosting economic growth is no longer a disputable matter (Al-Malkawi et al., 2012; Murinde, 2012; Greenwood et al., 2013; Hossein & Yazdan, 2007; Uddin et al., 2013). The determinants of stock market development are what empirical work so far has not yet agreed upon. In other words, there is no agreeable list of factors that influence stock market development in the existing empirical literature. It is for this reason that the knowledge of what factors determine stock market development are of paramount importance as that has a bearing on economic growth.

Studies on the determinants of financial development have dominated the last decade both in developing and developed countries. Specifically, majority of these studies focused on the determinants of stock market development in a single country as opposed to a bloc of countries. The current study addresses the weakness by focusing on the determinants of stock market development in emerging markets. Factors such as foreign direct investment (FDI), economic growth, banking sector development, infrastructural development, savings, inflation, trade openness, exchange rates and stock market liquidity were found by the empirical literature to be the main variables that were instrumental in influencing stock market development. It is the

basis upon which these variables were included in the model and tested using panel data analysis methods. The study is expected to help emerging markets to development stock market development policies that enhances economic growth. It is also expected to guide emerging markets on what policies needs to be crafted and implemented in order to deepen stock markets for economic growth purposes.

The structure of the study is as follows: Part 2 is the literature on the determinants of stock market development. Part 3 discusses the stock market development trends in emerging markets. Part 4 explains research methodology, results discussion and interpretation and part 5 concludes the study. Part 6 is bibliography.

Macroeconomic Determinants of Stock Market Development Empirical Literature

A number of empirical studies on determinants of stock market development have been carried out so far but those which focused on emerging markets are quite scant. Using correlation analysis with secondary data (1992-2012), Yusoff & Guima (2015) investigated the determinants of stock market development in Middle East and North Africa (MENA) region. Variables such as oil rent, income per capita, domestic savings, interest rates, exchange rates and inflation were found to have had an influential impact on stock market development in the MENA region. A study done by Kaehler et al. (2014) revealed that the development of the Iraq Stock Exchange during the period from 2004 to 2014 was influenced by the consumer price index (inflation), electricity consumption as a ratio of GDP, overall security situation, interest rates and exchange rates. Cherif & Gazdar (2010) investigated the determinants of stock market development in the 14 MENA region countries using panel data and instrumental variable techniques with data ranging from 1990 to 2007. They found out that interest rates, income level, stock market liquidity and banking sector development were the major factors that influenced stock market development in the MENA region.

In a study of the determinants of stock market in Pakistan using regression analysis with monthly time series data (2007-2012), Dev & Shakeel (2013) found out that portfolio investment and market liquidity were the two major factors that influenced stock markets growth in Pakistan. Market capitalisation and the discount rates were found to have had an insignificant positive impact on stock market growth in Pakistan. John et al. (2010) explored the determinants of stock market development in Nigeria using error correction model (ECM) with annual time series secondary data (1970-2007). The lag of stock market development, rate of savings and stock market liquidity were found to be the instrumental factors behind stock market development in Nigeria.

Pushpakumara & Anthony (2009) also investigated the determinants of stock market development in Sri Lanka using quantitative techniques such as correlation, regression and analysis of variance (ANOVA) with monthly time series data from 1999 to 2008. Their findings were threefold: (1) Inflation and exchange rates had a marginal positive impact on stock market capitalisation, (2) Interest rates negatively affected stock market and (3) Factors which had a significant positive influence on stock market growth in Sri Lanka include gross domestic product (GDP), savings, investment and money supply. Using structural autoregressive (SVAR) approach with quarterly time series data from 2000 to 2014, Akosah (2016) studied the determinants of stock market development in Ghana. Election cycles, financial depth, foreign direct investment (FDI), economic growth and current inflation rates were found to be the major positive determinants of stock market development in Ghana in the short and long run. Among

the variables which had a deleterious impact on stock market development in Ghana included country risk premium, treasury bill rates and government expenditure (Akosah, 2016, p. 50).

Using vector error correction model (VECM), Rahman et al. (2009) studied the determinants of Malaysian stock market development. They observed that interest rates, exchange rates, foreign currency reserves, industrial production index and money supply determined the direction and rate of stock market development in Malaysia. The Malaysia stock market growth was more influenced by industrial production index and foreign currency reserves than it was responsive to exchange rates, interest rates and money supply (Rahman et al., 2009, p. 96). Investigating Dhaka (in Bangladesh) stock exchange growth determinants using multiple regression analysis with annual time series data from 1995 to 2015, Islam et al. (2017) noted that consumer price index (inflation), economic growth and total market capitalisation were the major variables which influenced stock market development in Bangladesh.

Other empirical studies which explored the determinants of stock market development are summarised in Table 1.

Author	Country/ Countries	Methodology	Findings
Ho & Iyke (2017)	No specific country	A literature review approach	Institutional factors such as trade openness, financial liberalization, corporate governance and legal protection of investors had a positive effect on stock market development. Macroeconomic variables such as high inflation and weak exchange rates reduce stock market development whilst real GDP and high economic growth rate were found to have had a positive influence on stock market development.
Naceur et al. (2007)	MENA region	Panel data analysis	Stock market liquidity, savings and financial intermediary were the three variables which were found to have had a significant positive impact on stock market development in the MENA region.
Hosain & Nowreen (2015)	Bangladesh	Multiple regression analysis	Stock market development was found to have been positively influenced by stock market liquidity, liquidity and size in Bangladesh. Institutional and regulatory factors also determined stock market development in Bangladesh (Hosain & Nowreen, 2015, p. 91).
El-Nader & Alraimony (2014)	Jordan	VECM and variance decomposition	Stock market development in Jordan was found to have been positively affected by credit to the private sector, gross capital formation, money supply, total value traded and consumer price index. Net remittances and nominal GDP had a negative impact on stock market development in Jordan. On the other hand, variance decomposition approach noted that stock market development and macroeconomic variables studied were co-integrated.
Owiredu et al. (2016)	Ghana	Multiple regression analysis	Only stock market liquidity was found to have had a significant positive impact on stock market development. Other macroeconomic variables such as domestic savings, private capital flows and inflation had non-significant positive influence on stock market development in Ghana.
Jun et al. (2015)	Cameroon	Multiple regression analysis	High stock market liquidity, private capital flows and foreign direct investment (FDI) were found to have had a positive and significant impact on stock market development in Cameroon. On the contrary, high banking sector development and economic growth negatively but non-significantly influenced stock market development in Cameroon.
El-Wassal (2013)	No specific country	A literature review approach	Regulatory framework, political stability, banking sector development, monetary policy, fiscal policy, economic size, economic growth, stage of economic development, portfolio capital flows and trade openness were the variables that were found to have an influence on stock market development.
Shahbaz et al. (2016)	Pakistan	VECM approach	Whilst inflation, economic growth investment and financial development had a positive impact on stock market development, trade openness was found to have had a negative influence on stock market development in Pakistan.

Author (Year)	Country	Methodology	Findings
Zafar (2013)	Pakistan	Multiple regression model	The findings are threefold: (1) Banking sector development had a negligible impact on stock market development, (2) real interest rates negatively influenced stock market development and (3) FDI and stock market value traded positively and significantly affected stock market development in Pakistan.
Nguyen & Hanh (2012)	Southeast Asian countries	Panel regression analysis	Factors such as macroeconomic stability, stock market liquidity, savings, financial development and income growth rate positively influenced stock market development. On the other hand, stock market development was negatively affected by change in inflation rates and financial crisis in Southeast Asian countries.
Acquah-Sam (2016)	Ghana	Multiple regression model	FDI and inflation had an insignificant influence on stock market development whereas treasury bill rates negatively affected stock market development in Ghana. Variables which positively and significantly affected stock market development in Ghana include economic growth and gross capital formation.
Ayunku & Etale (2013)	Nigeria	Multiple regression model	High inflation and savings rate negatively impacted on stock market development in Nigeria. The same study revealed that market capitalization, exchange rates and credit to the private sector had a positive and significant influence on stock market development in Nigeria.

Source: Author compilation

STOCK MARKET STRUCTURE IN EMERGING MARKETS

Table 2 shows averages of the stock market development indicators for the emerging markets during the period from 1994 to 2014.

	Stock market capitalisation (% of GDP)	Stock market total value traded (% of GDP)	Stock market turnover ratio (%)
Europe			
Czech Republic	19.00	10.32	48.06
Greece	44.97	24.73	54.12
Poland	23.15	8.99	47.69
Portugal	34.95	22.06	59.41
Russia	40.34	22.22	37.92
Turkey	27.07	37.49	148.30
Latin America			
Argentina	15.40	5.43	34.86
Brazil	44.03	23.93	55.78
Colombia	32.33	4.50	11.23
Mexico	28.98	8.33	29.46
Peru	34.82	3.83	14.59
Asia			
China	39.42	60.71	160.86
Hong Kong	628.51	342.78	54.01
Indonesia	32.29	11.02	37.66
India	56.20	42.71	102.44
Malaysia	154.99	41.63	29.02
Philippines	57.38	12.88	22.77
Republic of Korea	60.94	100.92	179.16
Thailand	61.39	43.90	72.36

Singapore	194.42	101.59	54.39
Africa			
South Africa	197.16	47.67	23.93

Source: Author's calculations based on the World Development Database

Hong Kong, Malaysia, Singapore and South Africa recorded the highest mean on stock market capitalisation ratio above the overall mean of 87.04% of GDP. The same group of nations are outliers considering the size of their mean stock market capitalisation ratio which are well above the overall mean. Argentina and Czech Republic are the two countries with the lowest mean stock market capitalisation ratios which were below the overall mean of 87.04% of GDP.

China, Hong Kong, Republic of Korea and Singapore had their mean stock market value traded ratios above the overall mean of 46.55% of GDP. Argentina, Colombia, Mexico, Peru and Poland had the lowest mean stock market value traded ratios below the overall mean. In terms of the mean stock market value traded ratios Singapore and Republic of Korea are the outliers.

Colombia and Peru recorded the lowest mean below the overall mean whereas Turkey, Thailand, India, China and Republic of Korea had the highest mean stock market turnover ratio above the overall mean of 60.86% of stock market capitalisation. Republic of Korea, Turkey, India and China are the outliers using stock market turnover as a criteria.

RESEARCH METHODOLOGY

Data and Unit of Analysis

Annual panel secondary data of emerging markets ranging from 1994 to 2014 was used for the purposes of the current study. The choice of emerging markets included in the current study is according to International Monetary Fund (2015) report and data availability. For information on variables used and sources of data refer Table 3.

General Model Specification

Taking into account the literature (section 2) and availability of data, the determinants of stock market development are summarised in equation 1.

$$\text{STOCK} = f(\text{FDI, GROWTH, INFR, SAV, INFL, OPEN, EXCH, BANK, LIQUID}) \quad [1]$$

Variable	Description	Proxy used	Source of data
STOCK	Stock market development	Stock market capitalisation (% of GDP)	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)
FDI	Foreign direct investment	Net FDI (% of GDP)	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)
GROWTH	Economic growth	GDP per capita	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)

Variable	Category	Measurement	Source
BANK	Banking sector development	Domestic credit to private sector by banks (% of GDP)	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)
INFR	Infrastructural development	Electric consumption (% of GDP)	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)
SAV	Gross savings	Gross domestic savings (% of GDP)	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)
INFL	Inflation	Inflation consumer prices (annual %)	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)
OPEN	Trade openness	Total exports and imports (% of GDP)	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)
EXCH	Exchange rate	Local currency against the United States Dollar (US \$)	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)
LIQUID	Stock market liquidity	Stock market traded value (% of GDP)	World Development Indicators (WDI), International Financial Statistics (IFS) and Global Financial Indicators (GDI)

Source: Author compilation

Variables Used, Theory Intuition and a Priori Expectation

Variable	Theory intuition	Source	Expected sign
FDI	FDI inflows enhance stock market competition and thereby making them more efficient. There are high chances that multinational firms that bring FDI inflow end up listing their shares on the stock exchange of the host country. FDI can increase the liquidity of the stock markets if a portion of foreign investments is used to acquire shares in the host country.	Shahbaz & Rahman (2010); Levine (1997)	+
GROWTH	Economic growth leads to an increase of GDP per capita and the demand of financial services. This leads to the introduction of new financial sector companies in order to satisfy the high appetite for financial services.	Yartey & Adjasi (2007); Robinson (1952); & Patrick (1966)	+
BANK	Banks increase the quantity of money available for investment in stock market through pooling savings and reducing liquidity risk.	Ndikumana (2005)	+
INFR	Increase in infrastructure investment enhances the overall performance of firms through lowering down the cost of production, opening up new production avenues and markets.	Ifeakachukwu (2015)	+
SAV	The amount of capital that flows into the stock market to a larger extent relies on the quantity of savings in the economy.	Garcia & Liu (1999)	+

INFL	High inflation result in repression and underdevelopment of the financial sector by making holding on to money assets less vital as it they can easily lose value. Investors are more inclined to replace transaction services for money balances in a high inflation environment in order to protect the value of their assets. Their decisions lead to higher financial development as the rate at which financial services are produced goes up in order to match the increased demand.	Haslag & Koo (1999); Ikhide (1992); English (1999)	- +
OPEN	Openness of the economy spurs stock market development through attracting foreign and domestic investment into the financial system.	Huang & Temple (2005)	+
EXCH	A change in exchange rates influence the company's foreign profits and overall operations which in turn affect stock prices of that company.	Olugbenga (2012); Asaolu & Ogunmuyiwa (2011)	+/-
LIQUID	Liquid stock markets allow investors to access their savings with ease and enhance capital allocation. This increases the investors' confidence in the stock market hence promoting stock market development in the long run.	Yartey & Adjasi (2007)	+
OPEN.FDI	Trade openness of the economy attracts foreign direct investment into the financial system hence enhancing financial sector development.	Huang & Temple (2005)	+

Source: Author compilation

Econometric Model Specification

Consistent with Sghaier and Abida (2013), equation 1 was transformed to equation 2 in order to show the econometric relationship between stock market development and its determinants. Equation 2 was estimated using the panel data analysis methods (pooled OLS, fixed and random effects).

$$STOCK_{i,t} = \beta_0 + \beta_1 FDI_{i,t} + \beta_2 GROWTH_{i,t} + \beta_3 INFR_{i,t} + \beta_4 SAV_{i,t} + \beta_5 INFL_{i,t} + \beta_6 OPEN_{i,t} + \beta_7 EXCH_{i,t} + \beta_8 BANK_{i,t} + \beta_9 LIQUID_{i,t} + \varepsilon_{it} \quad [2]$$

Where: β_0 represents the intercept term whilst $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$ and β_9 stands for co-efficients of FDI, economic growth, infrastructural development, savings, inflation, trade openness, exchange rates, banking sector development and stock market liquidity respectively. t and i subscripts respectively represents country and time. ε_{it} is the error term.

RESULTS, DISCUSSION AND INTERPRETATION

This section focus on panel unit root tests, panel co-integration tests and panel data analysis (Tables 5, 6 and 7 respectively).

Level	LLC	IPS	ADF	PP
L(STOCK)	-5.08***	-2.69***	68.06***	118.05***
L(FDI)	-5.58***	-4.25***	88.57***	156.28***

L(GROWTH)	-1.8495**	-0.01	34.21	19.05
L(INFR)	3.88	3.28	26.88	20.53
L(SAV)	-1.82**	-2.13**	68.36***	85.19***
L(INFL)	-3.35***	-3.59***	80.87***	131.38***
L(OPEN)	-1.09	-0.41	46.66	62.54**
L(EXCH)	-4.32***	-1.59*	48.79	281.31***
L(BANK)	0.14	1.32	32.01	50.48
L(LIQUID)	-2.92***	-1.89**	60.36**	77.72***
First difference				
L(STOCK)	-10.23***	-11.51***	195.34***	389.08***
L(FDI)	-8.63***	-11.05***	185.73***	337.29***
L(GROWTH)	-4.65***	-4.13***	83.96***	140.57***
L(INFR)	5.83*	-1.85**	73.48***	123.38***
L(SAV)	-6.32***	-6.65***	122.57***	248.67***
L(INFL)	-10.19***	-11.51***	193.59***	376.85***
L(OPEN)	-7.49***	-7.24***	127.37***	280.92***
L(EXCH)	-4.75***	-3.09***	70.87***	117.48***
L(BANK)	-8.04***	-5.59***	105.28***	155.24***
L(LIQUID)	-8.49***	-8.05***	140.33***	280.44***

Source: Author's compilation from E-Views

Note: LLC, IPS, ADF and PP stands for Levin, Lin and Chu (2002); Im, Pesaran & Shin (2003); ADF Fisher Chi Square and PP Fisher Chi Square tests respectively. *, ** and *** denote 10%, 5% and 1% levels of significance, respectively.

All variables were stationary at first difference (Table 5), a condition which has to be met before data analysis is done. The finding paved way for panel co-integration and panel main data analysis.

The results of a co-integration test among the ten variables under study are shown in Table 6.

	T-statistic	Probability
Augmented Dickey-Fuller (ADF)	-3.7938	0.0001

Source: Author's compilation from E-Views

The probability (0.0001) which is less than 5% means that the null hypothesis which says that there is no co-integration among the ten variables (stock market development, stock market liquidity, banking sector development, exchange rates, trade openness, inflation, savings, infrastructural development, economic growth and FDI) is rejected. In other words, there is a long run relationship among the ten variables under study in emerging markets. Table 7 shows the panel data analysis results.

	Fixed effects		Random effects		Pooled OLS	
	Co-efficient	t-statistic	Co-efficient	t-statistic	Co-efficient	t-statistic
FDI	0.0071	0.2421	0.0128	0.4316	0.0846**	2.4176
GROWTH	-0.0267	-0.2432	0.1352*	1.8777	0.0780	1.3310
INFR	-0.0470	-0.3051	-0.0183	-0.1449	-0.2058***	-2.9601

SAV	0.9003***	5.8643	0.6884***	4.7039	-0.2191**	-2.0400
INFL	-0.0394	-1.6384	-0.0570**	-2.5193	-0.0292	-0.9720
OPEN	0.2016	1.4756	0.3098***	2.9007	0.3948***	6.3420
EXCH	0.1083**	2.1457	0.0809**	2.2814	0.0028	0.2035
BANK	0.0759	1.0556	0.0276	0.3997	0.1626***	2.8020
LIQUID	0.4591***	16.0891	0.4530***	16.1279	0.4307***	13.9214
C	-1.1875	-0.9236	-2.2889***	-3.1022	1.8309***	4.2599
	R-squared	0.8986	R-squared	0.5788	R-squared	0.6679
	Adjusted R-squared	0.8859	Adjusted R-squared	0.5700	Adjusted R-squared	0.6609
	F-statistic	70.75	F-statistic	65.81	F-statistic	96.30
	Prob (F-Statistic)	0.0000	Prob (F-Statistic)	0.0000	Prob (F-Statistic)	0.0000

Source: Author compilation from E-Views (8)

***/**/* indicates 1%, 5% and 10% significance levels respectively.

Under all the three panel data analysis approaches, savings, exchange rate and stock market liquidity had a positive and significant impact on stock market development in line with literature (Table 4). FDI positively but non-significantly influenced stock market development under fixed and random effects whereas pooled OLS indicates that FDI had a positive and significant impact on stock market development in emerging markets, in line with Shahbaz and Rahman (2010). Economic growth negatively impacted on stock market development under fixed effects, positively and significantly influenced stock market development under random effects and positively but non-significantly impacted on stock market development under pooled OLS. Contrary to theoretical predictions, infrastructural development negatively influenced stock market development across all the three panel data analysis approaches.

As expected and in line with theoretical predictions (Haslag & Koo, 1999), inflation had a negative impact on stock market development in emerging markets. Trade openness positively but insignificantly affected stock market development under fixed effects whilst stock market development was positively and significantly influenced by trade openness under both random effects and pooled OLS in emerging markets. The results resonate with Huang and Temple (2005) who argued that openness of the economy spur stock market development through attracting foreign and domestic investment into the financial system. Both fixed and random effects found out that banking sector development had a positive but non-significant impact on stock market development. On the other hand, stock market development was positively and significantly affected by banking sector development in emerging markets. The findings are in line with Ndikumana (2005) who observed that banks increase the quantity of money available for investment in stock market through pooling savings and reducing liquidity risk.

CONCLUSION

The current study explored the determinants of stock market development in emerging markets using the pooled OLS, fixed and random effects approaches with data ranging from 1994 to 2014. The major factors influencing stock market development in line with empirical literature included FDI, economic growth, infrastructural development, savings, inflation, trade openness, exchange rates, banking sector development and stock market liquidity. The impact of these factors on stock market development in emerging markets was then tested using an empirical model (equation 2). FDI, savings, economic growth, trade openness, exchange rates,

banking sector development and stock market liquidity to a larger extent had a positive impact on stock market development in emerging markets (Table 7). Majority of the findings on the determinants of stock market development resonate with theoretical literature (Table 4). The current study therefore urges emerging markets to implement policies that accelerate economic growth, FDI, banking sector development, savings, trade openness and stock market liquidity in order to enhance their stock market development. Future studies should take into account the dynamic nature of stock market development data. They should also address the endogeneity problem that normally characterise the relationship between stock market development and its determinants.

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