Chapter 24
Stock Market Development and Economic Growth: An Empirical Analysis Between Turkey and BRICS Countries

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Abstract There is an overwhelming consensus that vibrant stock markets exceedingly affect countries' economic progress. This paper tries to examine the complex linkages between stock market development and economic growth employing market capitalization ratio, turnover ratio and total value of shares traded as percent of GDP as proxies to stock market development while GDP per capita and FDI as a percentage of GDP to gauge economic development of BRICS (Brazil, Russia, India, China and South Africa) and Turkey. Significant positive links were revealed by VAR results, indicating that stock market development positively and significantly affects the economic growth of Russia, India and China. The Ganger causality test model uncovers that stock market development significantly and robustly influences economic growth for Russia, India, Turkey and South Africa whereas for Brazil and China, it is the economic growth which promotes stock market progress through enhancing liquidity. The complexities of stock markets and their relationship with economic growth prevented us from generalizing their positive link. Accordingly, the need of further research is apparent in order to obtain more evidence about their interaction.

Keywords Stock market development · Economic growth · Complexity · BRICS countries

24.1 Introduction

One of the essential requisite for the accelerated development of an economy is the existence of a dynamic financial market. A financial market helps the economy in saving mobilization, productive investment, national, entrepreneurship and

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industrial growth among others. Moreover, strong local markets can also provide a more stable source of financing for the public and the private sectors, insulating them to some extent against volatile global capital flows.

The growing importance of stock markets around the world has recently opened a new avenue of research into the relationship between financial development and economic growth, which focuses on the effects of stock market development. Stock prices determined in exchanges, and other publicly available information help investors make better investment decisions. Better investment decisions by investors mean better allocation of funds among corporations and, as a result, a higher rate of economic growth.

The positive impact of stock market development towards economic growth of countries is not fully acknowledged by some researchers. They argue that such nexus is highly affected by the choice of countries (developed and developing), the variables or indicators used, statistical models applied etc. others believe that the relationship between finance and growth is exceedingly embellished. Hence, this paper tries to check this complex relationship between stock market development and economic growth of selected countries in emerging economies.

24.2 The Complexity of Stock Markets and Their Relation with Economic Growth

As Mauboussin (2002) stated, a vital feature of a complex adaptive system is "critical points". Explicitly, huge changes arise due to the accumulation of small stimuli—just as the accumulated weight of many sand grains precipitates large avalanches. This entails that large fluctuations are endogenous to such a system. Critical points are a formal way to express the concept of "the straw that broke the camel's back." Seeking specific causes for even big-scale effects is often an exercise in futility.

A complex adaptive system reveals a number of indispensable characteristics and methods.

- Firstly, aggregation is the emergence of complex, large scale behaviors from the collective interactions of many less-complex agents. In capital markets caption, the behavior of the market "emerges" from the relations of investors. This is what Adam Smith, the famous economist, described as the "invisible hand."
- Secondly, agents within a complex adaptive system obtain information from the environment, mingle it with their own interaction with the environment, and develop decision rules. Individual trading rules, the disappearance of anomalies and investment rules of thumb can be regarded as decision rules in the capital markets.
- Thirdly, the nonlinear systems, the aggregate behavior is more complicated than would be predicted by totaling the parts, create an interaction effect. For the

capital markets, this means that cause and effect may not be merely interacted but may instead intermingle to produce embellished result.
- Fourthly, a feedback system is one in which the output of one iteration becomes the input of the next iteration. Feedback loops can intensify (positive feedback) or diminish (negative feedback) an effect.

A financial market generally consists of the so called agents (traders), equipped with varying amounts of capital, and the interaction rules (commercial laws) of the trading platform. The agents interact among themselves in an exceedingly nonlinear way. Each agent tries to acquire the maximum possible profit, by selling and buying financial assets of all types at different times. In contrast to such a simple microscopic structure, the macroscopic behavior of financial markets appears to be surprisingly rich: the seemingly uncorrelated swings of financial indices and the extreme event of a crash constitute typical phenomena of complex systems (Sarkar 2007).

The stock market is examined as a complex institution instilled with intrinsic mechanism through which long-term funds of the major sectors of the economy involving households, firms, and government are organized, tied together and made accessible to various sectors of the economy (Nyong 1997). The complexity arises due to various reasons ranging from social, technological, economic, political, asymmetric and incomplete information to idiosyncrasies of investors and other stakeholders. In addition, Alile (1997) documented that the complexities of stock market may occur from tendency in globalization and amplified assortment of new instruments being dealt with: equity options, derivatives of various forms, index futures etc. nevertheless, the fundamental motives of the stock exchanges world-wide remain the safeguarding of the efficient market with attendant advantage of economic growth.

24.3 Theoretical Background

Before we consider the precise channels through which the stock market may help or hinder economic development it will be practical to observe the broader issues of the role of finance in economic growth from alternative theoretical perspectives.

24.3.1 Growth Theory

Growth theory assumes that the interest rate plays the main role in equilibrating an economy's savings and investment. According to the neo-classical Golden Rule, the optimal growth path is equal to the real interest rate. For a long time, the design of the financial sector was thought to be of no major significance for economic decision making because in the presence of perfect markets, the financial sector produces nothing but a veil on the true determinants of economic developments.

While today's understanding of market imperfections has allowed this view to be put aside, the exact transmission channels from finance to economic activity and in particular any estimate of their quantitative impact are still subject to considerable uncertainty.

The finance and economic growth nexus may run through various transmission channels. Already a very simple growth model illustrates that there are three important connections between financial variables and economic activity. Financial development might (1) reduce the loss of resources required to allocate capital; (2) increase the savings ratio; and (3) raise capital productivity.

24.3.2 Financial Deepening, Repression and Liberalization

There is another branch of theoretical literature related to developing countries where the capital markets are generally underdeveloped. This body of notion is associated with McKinnon and Shaw who have tried to link stock market development to economic growth in developing countries (Singh 1993). They used "financial deepening" to describe the constructive impact of financial intermediation and modernization towards economic development. The measure of governments which hold interest rate artificially low and provide subsidized credits either to favored sectors or to them is detrimental to long term economic growth. This measure has illustrated as "financial repression". The third which is "liberalization" of these repressed credit markets will promote development, since raising interest rates to their equilibrium levels leads not only to higher savings but also to more efficient use of investment resources.

24.3.3 Financial Market Theory of Development

The use of private flows of capital and stock market creation began to shape into a new theory of development put forward by the World Bank's World Development Report for 2000. The "*financial market theory of development*" has found support in several academic studies. The theory implies that stock markets will boost economic growth to the extent that they are entrenched in an institutional matrix that ensures that their signals guide decision makers toward growth opportunities. But countries vary substantially in the extent to which they provide hospitable climates for financial markets. (World Bank WDR 2000)

The relationship between financial development in general and stock market development in particular and economic growth has been extensively debated and scrutinized over the last two centuries both theoretically and empirically. Theoretically, some argue that stock markets promote long-run growth. For example, Greenwood and Smith (1996) show that stock markets lower the cost of mobilizing savings, facilitating investments into the most productive technologies. Obstfeld

(1994) shows that international risk sharing through internationally integrated stock markets improves resource allocation and accelerates growth. Bencivenga et al. (1996) and Levine (1991) have argued that stock market liquidity—the ability to trade equity easily—plays a key role in economic growth. Besides, studies made by Bagehot (1873), Schumpeter (1912), Hicks (1969), Miller (1998) confirmed that the financial development is a significant contributor to growth.

Contrary to the above theoretical view, others cast doubts on the contribution of stock markets to long-run growth. For instance, the role of stock markets in improving informational asymmetries has been questioned by Stiglitz (1985) who argues that stock markets reveal information through price changes rapidly, creating a free-rider problem that reduces investor incentives to conduct costly search. The contribution of liquidity itself to long-term growth has been questioned. Demirgüç-Kunt and Levine (1996) point out that increased liquidity may deter growth via three channels. First, it may reduce saving rates through income and substitution effects. Second, by reducing the uncertainty associated with investments, greater stock market liquidity may reduce saving rates because of the ambiguous effects of uncertainty on savings; third, stock market liquidity encourages investor short-sightedness, unfavorably affecting corporate governance and thereby plummeting growth.

24.4 Review of Empirical Literature

Like the theoretical literature, the empirical evidences are also mixed and disputed concerning the impact of stock market development on economic growth. Several studies have shown a positive link between financial development and economic growth. Levine and Zervos (1998) measured stock markets development along with different magnitude and have suggested strong statistically significant relationship between initial stock market development and subsequent economic growth. An efficient stock market contributes to attract more investment by financing productive projects that lead to economic growth, mobilize domestic savings, allocate capital proficiency, reduce risk by diversifying, and facilitate exchange of goods and services. Empirical evaluation of Mohtadi and Agarwal (2001) on the relationship between stock market development and long-run growth using time series cross-section data for 21 countries from 1977 to 1997 suggests that stock market development is positively associated with economic growth.

It entails that the stock market development leads to higher growth because it reduces both liquidity and productivity shocks. Besides, Atje and Jovanovic (1993), using a data set of 39 countries over the period 1980–1988, supported the assertion that a strong, positive and statistically significant relationship existed between stock markets and economic growth. This confirms that the existence of stock market development highly affects the level and/or the growth rate of economic activity through the ratio of the value of stock market trading and gross domestic product (GDP).

Mercan and Göçer (2013) examined the effect of financial development on economic growth for the most rapidly developing countries (emerging markets) (Brazil, Russia, India, China and Turkey, BRIC-T) via panel data analysis using the annual data for the period from 1989 to 2010. Foreign direct investments and trade openness were included in the analysis. According to empirical evidence derived from the study made with panel data analysis it was found that the effect of financial development on economic growth was positive and statistically significant. This finding supports the idea that financial systems function for markets by meeting the funding needs of real sector.

Consequently, they provide a source by contributing to the effective allocation of savings and eventually they sustain the economic growth. Likewise, Gürsoy and Müslümov (2000) examine causality relationships between stock markets and economic growth based on the time series data compiled from 20 countries for the years 1981 through 1994. Analysis based on the panel data revealed a two-way causation between stock market development and economic growth. Apart from the above empirical evidences, quite a lot of studies propped up the constructive effect of stock market development on economic growth.

Some other studies show assorted results. Rioja and Valev (2011) find that stock markets have not contributed to capital accumulation or productivity growth in low income countries. Conversely, in high-income countries, stock markets are found to have sizable positive effects on both productivity and capital growth. Perhaps the size and activity of equity markets in developing countries has not yet reached levels where they are significant determinants of the sources of growth. Alajekwu and Achugbu (2012) investigated the role of stock market development on economic growth in Nigeria. Their results show that market capitalization and value traded ratios have a very weak negative correlation with economic growth while turnover ratio has a very strong positive correlation with economic growth. This shows that liquidity is significant for economic growth but does not establish same for stock market size. An empirical analysis for Turkey was made by İnce (2011) on financial liberalization, financial development and economic growth. Her result revealed that there is a strong relation between finance and growth in the short-run, while it depicts the absence of long run relationship. This implies that the existence of high inflation, instability and uncertain economic policies prevent the long term effect.

In contrast, others concluded that the effect of stock market on economic development is either negative or insignificant. Harris (1997) uncovered that the evidence suggesting that stock markets promote economic development was “at best very weak”. In some studies it is also stated that the relationship between financial development and economic growth variables is weak, even though financial growth may play a decreasing role in the economic growth process (Singh 1997) while others reject the existence of a finance-growth relationship (Lucas 1988). The author argues that economists tend to over-emphasize the role of financial factors in the process of growth. Besides, Ake and Ognaligui (2010) probed the Douala stock exchange and Cameroonian economic growth nexus employing Granger causality tests. The finding which was based on the stock exchange variables and Cameroonian GDP disclosed the absence of association

between stock exchange and economic growth for Cameroon. The result indicated that the Cameroonian economy couldn't be enhanced due to the occurrence of low value of market liquidity in Douala Stock Exchange.

This paper seeks to shed light on the impact that stock markets have had on economic development of Turkey and BRICS (Brazil, Russia, India, China and South Africa). It is going to employ market capitalization, turnover ratio and value added ratio to gauge stock market development while gross domestic product (GDP) per capita and foreign direct investment (FDI) as a percentage of GDP to determine economic growth.

24.5 Measurement of Variables

24.5.1 Stock Market Development

Stock market development is a multi-dimensional and complex concept. It is usually measured by stock market size, liquidity, volatility, concentration, integration with world capital markets, and the legal rules (regulation and supervision) in the market. Markets that are liquid should be able to handle heavy trading without large price swings (Levine 1996).

24.5.1.1 Market Size

We determine the *size* of the stock market using the ratio of market capitalization divided by GDP. Market capitalization (or market cap) is the total value of the issued shares of a publicly traded company; it is equal to the share price times the number of shares outstanding. As outstanding stock is bought and sold in public markets, capitalization could be used as a proxy for the public opinion of a company's net worth and is a determining factor in some forms of stock valuation. The assumption underlying the use of this variable as an indicator of stock market development is that the size of the stock market is positively correlated with the ability to mobilize capital and diversify risk.

24.5.1.2 Liquidity

Liquidity is used to refer to the ability of investors to buy and sell securities easily. It is an important indicator of stock market development because it denotes how the market lends a hand in improving the allocation of capital and thus boosting the prospects of long-term economic growth. This is possible through the ability of the investors to quickly and cheaply alter their portfolio thereby reducing the riskiness of their investment and facilitating investments in projects

that are more profitable though with a long gestation period. Two main indices are used to monitor the performance of the stock market liquidity:

- **Turnover Ratio** gauges the value of the traded shares in the domestic stock market divided by the total value of shares in the market. It measures how active or liquid the stock market is relative to its size. Though it is not a direct measure of theoretical definitions of liquidity, high turnover is often used as an indicator of low transaction costs.
- **Value Traded Ratio** is the value of all shares traded in the stock market as percent of GDP. It appraises how active the stock market is as a share of the economy. The total value traded ratio measures the organized trading of firm equity as a share of national output and therefore should positively reflect liquidity on an economy-wide basis.

24.5.2 Economic Growth

Like stock market development, Economic growth is a broader and multifaceted notion too. It is the increase in the market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP. Of more importance is the growth of the ratio of GDP to population (GDP per capita), which is also called per capita income.

24.5.2.1 GDP Per Capita

It is a measure of the total output of a country that takes the gross domestic product (GDP) and divides it by the number of people in the country. The per capita GDP is especially useful when comparing one country to another because it shows the relative performance of the countries. A rise in per capita GDP signals growth in the economy and tends to translate as an increase in productivity.

24.5.2.2 Foreign Direct Investment as a Percentage of GDP

Foreign direct investment (FDI) is a direct investment into production or business in a country by an individual or company of another country, either by buying a company in the target country or by expanding operations of an existing business in that country. An increase in FDI may be associated with improved economic growth due to the influx of capital and increased tax revenues for the host country. Host countries often try to channel FDI investment into new infrastructure and other projects to boost development.

24.6 Data Sources and Methodology

24.6.1 Data Sources

Data which help to describe the relationship between stock market development and economic growth has been collected from World Bank's World Development Indicator and Organization for Economic Co-operation and Development (OECD) 2013 data bases. Annual time serious data have been taken from the sampled countries of BRICS (Brazil, Russia, India, China and South Africa) and Turkey for 19 years covering the time span of 1994–2012.

24.6.2 Methodology

Market capitalization as a percentage of GDP (MCR), turnover ratio of stocks traded (TOR) and total values of stocks traded as a percentage of GDP (VTR) are used as proxies to measure stock market development. Besides, economic growth has been measured by two proxies namely, annual growth of GDP per capita and Foreign Direct Investment (FDI) as a percentage of GDP.

24.6.3 Model Specification

The study used the vector auto-regression (VAR) model to analyze the relationship between economic growth and stock market development. It is an econometric model used to capture the linear interdependencies among multiple time series. It is one of the most successful, flexible, and easy to use models for the analysis of multivariate time series. It is a natural extension of the univariate autoregressive model to dynamic multivariate time series.

A VAR model describes the evolution of a set of k variables (called *endogenous variables*) over the same sample period ($t = 1,\ldots, T$) as a linear function of only their past values. The variables are collected in a $k \times 1$ vector y_t, which has as the ith element, $y_{i,t}$, the time t observation of the ith variable.

A *p-th order VAR*, denoted **VAR (*p*)**, is

$$y_t = c + A_1 y_{t-1} + A_2 y_{t-2} + \cdots + A_p y_{t-p} + e_t,$$

The dependent variables, economic growth, Y_1 and Y_2 were proxied by per capita Gross Domestic Product or simply abbreviated as (GDP) and Direct Investment as a percentage of GDP or shortly (FDI). Market capitalization as a percentage of GDP shortly (MCR), turnover ratio of stocks traded abbreviated as (TOR) and total values of stocks traded as a percentage of GDP simply (VTR) are

used to designate the independent variables X_1, X_2 and X_3 which assumed to measure stock market development. Based on the theoretical and empirical views, the relationship between economic growth and stock market development can be specified in two ways as:

$$\text{GDP per capita} = c_0 + c_1 * \text{MCR} + c_2 * \text{TOR} + c_3 * \text{VTR} + e_t$$

$$\text{FDI as percentage of GDP} = c_0 + c_1 * \text{MCR} + c_2 * \text{TOR} + c_3 * \text{VTR} + e_t$$

24.6.3.1 Unit Root Test

A key role in time series analysis is played by processes whose properties, or some of them, do not vary in time. Thus, one significant property of a vector autoregressive process is that its variables are stationary. However, financial and economic time series intrinsically demonstrate some form of volatility due to their dynamic nature. This non-stationary can be reflected in the form of trends, cycles, random walks, or a blend of all three. Non stationary data are usually erratic and cannot be modeled or forecasted. It is therefore essential to check the stationarity of the time series as if non stationary time series are not addressed accordingly, the regression will often exhibit unauthentic results.

Therefore, to get consistent-and-reliable outcomes, the non-stationary data has to be altered into a stationary one, usually through differencing. In order to test whether the series being discussed are stationary or not, and to verify their order of integration, the different unit root tests may be utilized. In this study, Augmented Dickey–Fuller test (ADF) that is a test for a unit root in a time series sample, has been used. At 5 % level of significance, results demonstrate that all the underlying variables (GDP, FDI, MCR, TOR and VTR) attained stationarity after a first difference.

Then, a VAR model is constructed, the results of which are shown below:

24.7 Major Findings

24.7.1 Vector Autoregression (VAR) Model Results

As it is depicted in Table 24.1, market capitalization ratio (MCR) with lag 1 positively and significantly affects the foreign direct investment (FDI) of Russia whereas other independent variables become insignificant to affect FDI for Russia.

Table 24.1 FDI and independent variable MCR

	Coefficient	Std. error	t-statistic	Prob.
C(5) MCR(−1)	0.045559	0.016864	2.701548	0.01

$\text{FDI}_{\text{Russia}} = c_0 + 0.045559 * \text{MCR}\ (-1)$

Table 24.2 India: Dependent variable FDI and GDP and independent variables MCR, TOR and VTR

	Coefficient	Std. error	t-statistic	Prob.
C(5) MCR(−1)	0.028633	0.012420	2.305452	0.0282
C(16) MCR(−1)	−0.205818	0.071990	−2.858976	0.0077
C(17) MCR(−2)	−0.188375	0.079143	−2.380187	0.0239
C(18) TOR(−1)	−0.188413	0.066353	−2.839568	0.0080
C(18) TOR(−2)	0.072431	0.034085	2.125014	0.0419
C(20) VTR(−1)	0.440769	0.155380	2.836710	0.0081

$FDI_{India} = c_0 + 0.028633 * MCR(-1)$
$GDP_{India} = c_0 + -0.205818 * MCR(-1) + -0.188375 * MCR(-2) + -0.188413 * TOR(-1) + 0.072431 * TOR(-2) + 0.440769 * VTR(-1)$

Table 24.3 China: Dependent variable FDI and GDP and independent variables MCR, TOR and VTR

	Coefficient	Std. error	t-statistic	Prob.
C(6) MCR(−2)	−0.039949	0.011508	−3.471523	0.0016
C(16) MCR(−1)	0.092176	0.041777	2.206365	0.0352
C(17) MCR(−2)	−0.092325	0.031127	−2.966048	0.0059
C(20) VTR(−1)	−0.060926	0.027886	−2.184814	0.0368
C(21) VTR(−2)	0.053342	0.017728	3.008818	0.0053

$FDI_{China} = c_0 + -0.039949 * MCR(-2)$
$GDP_{China} = c_0 + 0.092176 * MCR(-1) + (-0.092325) * MCR(-2) + (-0.060926) * VTR(-1) + 0.053342 * VTR(-2)$

As it is indicated in Table 24.2, market capitalization ratio (MCR) with lag 1 positively and significantly explain the change in dependent variable FDI whereas, MCR with lags 1 and 2 and turnover ratio (TOR) with lag 1 negatively and significantly explain the dependent variable GDP while TOR with lag 2 and VTR with lag 1 positively and significantly explain **FDI** (Table 24.3).

The foreign direct investment of China has been negatively affected by market capitalization ratio with lag 1. Likewise, market capitalization ratio with lag 2 and the total value of stocks traded with lag 1 negatively influence the GDP. Conversely, market capitalization ratio with lag 1 and VTR with lag 2 positively influence the GDP.

To put it briefly, the outcome of VAR model using the least square estimation method demonstrates mixed findings for the sampled countries. Statistically significant results have been found for Russia, India and China. Stock market development proxied by market capitalization ratio affects economic growth of Russia and India which is represented by FDI as a percentage of GDP similar to the findings of Levine and Zervos (1998), Mohtadi and Agarwal (2001), Mercan and

Göçer (2013) and Atje and Jovanovic (1993). When GDP used as proxy, results varied negatively and positively for India and China. The auto regression results of Brazil, South Africa and Turkey are statistically insignificant.

24.7.2 Granger Causality Test

Granger-Causality is implemented to scrutinize the direction of causality between economic growth and stock market development. An optimal lag length of 2 is used. The results are given below (Tables 24.4, 24.5, 24.6, 24.7, 24.8, 24.9):

The above Granger causality test model outcome tables reveal that Market capitalization ratio uni-directionally causes both the dependent variables GDP and FDI of Russia. Hence, stock market development catalysis economic growth for Russia. For China, it is the economic growth represented by GDP and FDI that affects stock market development signified by TOR while uni-directional casualty between stock market development through VTR and MCR and economic development via FDI and GDP respectively portrayed. Nevertheless, economic growth

Table 24.4 Russia pairwise Granger-Causality tests

Null hypothesis	Obs	F-statistic	Prob.
MCR does not Granger Cause FDI	17	12.3672	0.0012
MCR does not Granger Cause GDP	17	3.99669	0.0467

Table 24.5 China pairwise Granger-Causality tests

Null hypothesis	Obs	F-statistic	Prob.
FDI does not Granger Cause TOR	17	4.45760	0.0357
GDP does not Granger Cause TOR	17	4.63167	0.0323

Table 24.6 Turkey pairwise Granger-Causality tests

Null hypothesis	Obs	F-statistic	Prob.
VTR does not Granger Cause FDI	17	4.13628	0.0430
MCR does not Granger Cause GDP	17	7.84780	0.0066
GDP does not Granger Cause TOR	17	5.30498	0.0224

Table 24.7 Brazil pairwise Granger-Causality tests

Null hypothesis	Obs	F-statistic	Prob.
FDI does not Granger Cause TOR	17	4.58262	0.0332
GDP does not Granger Cause TOR	17	17.5708	0.0003

Table 24.8 South Africa pairwise Granger-Causality tests

Null hypothesis	Obs	F-statistic	Prob.
MCR does not Granger Cause GDP	17	4.45099	0.0358

Table 24.9 India pairwise Granger-Causality tests

Null hypothesis	Obs	F-statistic	Prob.
MCR does not Granger Cause FDI	17	19.6102	0.0002
GDP does not Granger Cause FDI	17	4.32906	0.0384

promotes the stock market development for Brazil through FDI and GDP unidirectionally causes TOR. Finally, stock market development through MCR of both South Africa and India fosters the economic growth via advancing GDP and FDI correspondingly.

Briefly, the Ganger causality test model uncovers that stock market development significantly and robustly influences economic growth for Russia, India, Turkey and South Africa whereas for Brazil and China it is the economic growth which promotes stock market progress at 5 % level of significance. This finding is similar to the empirical study by Gürsoy and Müslümov (2000).

24.8 Conclusion

This study empirically investigates the complex links between stock market development and economic growth in BRICS (Brazil, Russia, India, China and South Africa) and Turkey during the years 1994–2012 within a vector auto regression VAR framework and Granger causality test model. Significant positive links were revealed by VAR results, indicating that stock market development positively and significantly affects the economic growth of Russia, India and China. Conversely, the auto regression results of Brazil, South Africa and Turkey becomes statistically insignificant for the period. The former empirical results do shore up the theoretical literature (e.g., Levine 1991); in signifying that the stock market development prompts higher growth because it shrinks both liquidity and productivity shocks. In addition, it corroborates the notion that market size is positively correlated with the ability to mobilize capital and diversify risk thereby promote growth. Significant positive correlation between liquidity of stock markets and economic growth came across for China and India. Liquidity is an important attribute of stock markets because, in theory, liquid markets advance the allocation of capital and boost prospects for long-term economic growth.

The Ganger causality test model uncovers that stock market development significantly and robustly influences economic growth for Russia, India, Turkey and South Africa whereas for Brazil and China. It is the economic growth which promotes stock market progress through enhancing liquidity. Akin to the VAR

result, market capitalization ratio which is a measure of market size affects the economic growth of the former countries whereas turnover ratio that is used to gauge liquidity influences the later ones.

The findings of this study should be seen with vigilance due to subjective nature of picking the variables to measure stock market development and economic growth, the nature and timing of data, selection of statistical model and interpretation of the outcome. The complexities of stock markets and their relationship with economic growth prevented us from generalizing their positive link. Accordingly, the need of further research is apparent in order to obtain more evidence about the relationship between the stock markets and economic growth.

References

Ake B, Ognaligui RW (2010) Financial stock market and economic growth in developing countries: the case of Douala stock exchange in Cameroon. Int J Bus Manag 5(5):P82

Alajekwu UB, Achugbu AA (2012) The role of stock market development on economic growth in Nigeria: a time series analysis. Afr Res Rev 6(1):51–70

Alile H (1997) Government must divest. The business concord of Nigeria, 2nd December

Atje R, Jovanovic B (1993) Stock markets and development. Eur Econ Rev 37:632–640

Bagehot W (1873) Lombard Street, a description of the money market. Richard D. Irwin, Homewood

Bencivenga V, Smith B, Starr RM (1996) Equity markets, transactions costs, and capital accumulation: an illustration. World Bank Econ Rev 10(2):241–265

Demirguch-Kunt A, Levine R (1996) Stock market development and financial intermediaries: stylized facts. World Bank Econ Rev 10:291–321

Greenwood J, Smith B (1996) Financial markets in development and the development of financial markets. J Econ Dyn Control 21:145–181

Gürsoy CT, Müslümov A (2000) Stock markets and economic growth a causality test. Doğuş Üniversitesi Dergisi 1(2):124–131

Harris R (1997) Stock markets and development: a re-assessment. Eur Econ Rev 41:139–46

Hicks J (1969) A theory of economic history. Clarendon Press, Oxford

İnce M (2011) Financial liberalization, financial development and economic growth: an empirical analysis for Turkey. Yaşar University, Munich Personal RePEc, 31978

Levine R (1996) Stock markets: a spur to economic growth. Financ Dev 7–10

Levine R, Zervos S (1998) Stock markets, banks, and economic growth. Am Econ Rev 88:537–558

Levine R (1991) Stock markets, growth, and tax policy. J Finance 46:1445–1465

Lucas RE (1988) On the mechanics of economic development. J Monetary Econ 22(1):3–42

Mauboussin MJ (2002) Revisiting market efficiency: the stock market as a complex adaptive system. J Appl Corp Finance 14:47–55

Mercan M, Göçer İ (2013) The effect of financial development on economic growth in BRIC-T Countries: Panel data analysis. J Econ Soc Stud 3:1

Miller MH (1998) Financial markets and economic growth. J Appl Corp Finance 11:8–14

Mohtadi H, Agarwal S (2001) Stock market development and economic growth: evidence from developing countries. http://www.UWM.edu/mohadi/PAL-4-01.pdf. Accessed 30 Dec 2013

Nyong MO (1997) Capital market development and long-run economic growth: theory, evidence and analysis. First Bank Review, December 1997, pp 13–38

Obstfeld, M (1994) The logic of currency crises, Cahiers Economiques et Monetaires (Banque de France) 43:189–213

Rioja F, Valev N (2011) Stock markets, banks and the sources of economic growth in low and high income countries. J Econ Finance. http://www2.gsu.edu/~ecofkr/papers/stock_bank_07_11_11.pdf. Accessed 30 Dec 2013

Sarkar A (2007) Financial markets as complex systems. West Bengal University of Technology, Kolkata (Calcutta)

Schumpeter JA (1912) Theorie der wirtschaftlichen entwicklung. Leipzig: Dunker & Humblot, The Theory of Economic Development. Harvard University Press, MA

Singh A (1997) Financial liberalization, stock markets and economic development. Econ J 107:771–782

Singh A (1993) The stock market and economic development: Should development countries encourage stock markets? UNCTAD Rev 4:1–74

Stiglitz JE (1985) Credit markets and the control of capital. J Money Credit Banking 2:133–152

World Bank (2000) World development report