IMPACT OF MACROECONOMIC FACTORS ON STOCK EXCHANGES: A CASE STUDY OF EMERGING AND DEVELOPED ECONOMIES

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Abstract

This study aims to investigate the impact of macroeconomic variables on stock exchanges in developed and emerging countries. For this purpose, macroeconomic variables are GDP growth rate, inflation rate, saving, and Foreign Direct Investment (FDI). Furthermore, the stock market which are under observation were six in total and for which, three were taken from 'BRICS' nation such as Brazil, India, and China and remaining three were taken developed nation such as United Kingdom (UK), United States of America (USA), and Germany and cover a period from 2004 to 2014. The findings reveal that GDP growth rate, saving, and foreign direct investment (FDI) has positive and significant impact on performance of stock market whereas, other macro-economic variables like inflation has a negative impact on performance of stock exchanges either it may be the case of emerging or developed economies. According to research and analysis, we recommend that appropriate monetary and fiscal policies should be adopted to control the unpredicted behavior of stock market. Furthermore, regulatory bodies like IMF, World Bank and ministry of finance (MOF) of each country should do its work to lessen down its impact on stock market performance.

Key Words: FDI, GDP, Saving, Inflation, Stock Exchanges

1. Introduction

Stock market is the hub of all transactions through which sellers and buyers of securities exchange market meet with specific price and volume. Hence, stock prices are influenced by macroeconomic variables changes. Macroeconomic variables are a mile stone of data which is most often used by investors and policy makers for collecting knowledge of upcoming and current investment priority(Winpenny, 2009). The current study is focusing on three stock markets from developed countries and three countries from emerging countries, and it is an attempt to scrutinize the relationship among macroeconomic variables and stock market performance in United Kingdom, USA, Germany and Brazil, India and China respectively. The macroeconomic variables under discussions like GDP growth rate, inflation rate, saving, and Foreign Direct Investment (FDI).

There is need to find out the mechanism that how much these macroeconomic factors affect the stock market performance in developed and emerging countries. On the other hand stock market of developed countries like London, New York and Germany are also under

influence due to macroeconomic factors so the mechanism need to be investigated that how much influence these factors have on stock market(Hunjra, Chani, Shahzad, Farooq, & Khan, 2014).

RQ 1: Do changes in "gross domestic production" (GDP), "saving", "inflation rate", Foreign direct investment" have significant effect on stock market performance in period from January, 2004 to December, 2014.

RQ 2: To analyze and compare the stock market performance of emerging and developed countries.

RQ 3: To analyze and predict the future growth pattern of emerging and developed countries stock market.

The rest of the study is sequenced in the following manner to give more meaningful direction to the research. Section 1 contains the brief introduction. Section 2 describes the relevant literature and prior empirical studies. Section 3 includes the research methodology of the research and Section 4 contains results and discussion while the last section 5 ends up with the conclusion and recommendations.

2. Literature Review

Researchers are intended to use various theoretical frames for investigating impact of macroeconomic variables on stock exchange performance. Similarly, efficient market hypotheses developed by (Fama, 1981) and Arbitrage Pricing Theory (APT) developed by (Ross, 1976) are used to check macroeconomic variables on stock market performance. Hypothetical work demonstrates the constructive outcome of securities exchange improvement on monetary development (Demirgüç-Kunt & Levine, 1996; Levine & Zervos, 1998;A. Singh, 1997). The advancement of securities exchange is the result of numerous components like conversion scale, political solidness (Hossain, 2015), remote direct speculation, and monetary liberalization (Adam & Tweneboah, 2009). In the time of globalization, FDI is a noteworthy wellspring of capital inflow in the greater part of creating economies where it overcomes any issues of capital, innovation, administrative expertise, human capital development and more aggressive business environment.

A few studies demonstrate that FDI does not apply any autonomous impact on monetary development (Carkovic & Levine, 2002). Many researchers explains that how the macroeconomics indicator affect the stock market in the literature.(Fama, 1980) have reported that the inflation is inversely correlated with real activity but in actual state the reality shows the positive effects of changing inflation on stock market. Moreover (Geske & Roll, 1983)has reported the importance of policy responses for detail discussion of stock returns.

Effective capital markets are fundamental for financial development and thriving. Muhammed Monjurul Quadir, (2012) investigated the effects of macroeconomic variables of treasury bill, interest rate and industrial production on stock returns on Dhaka Stock Exchange for the period between January 2000 and February 2007 on the basis of monthly time series data using Autoregressive Integrated Moving Average (ARIMA) model. . Particularly, after the liberalization period of 1995, inflation, economic activity, Foreign Direct Investment (FDI), money supply, and index of NASDAQ were important in explaining Indian stock market variation(Srivastava, 2010). However, nominal exchange rate that was significant before liberalization period (1989-1995), was not significant after the liberalization period(Srivastava, 2010).

Plethora of researchers documented that there is association among macroeconomic variable and stock market returns and it is explored that macroeconomic variable can change stock prices(Barnor, 2014; Bilson, et al., 2001). (Ross, 1976)founded arbitrage pricing theory (APT) and he investigated the relationship between firm macroeconomic variables and stock returns. Additionally, there are a few studies that associate with multifactor model which consist of certain macroeconomic variables(Bilson, et al., 2001). As a result, potential investors attempts the forecast the stock market trends and share prices in obtaining minimum future risks and maximum benefits(Daske, 2006).

In the same way, (Pagano, 1993) reported a positive association between financial development and economic growth as added by GDP and he also made this framework "no possibility of establishing with confidence the direction of the causal mechanisms (p. 48)." However, a question arises of whether advance moving nature of stock prices can be a driving force between economic growth and stock market(Kilian & Park, 2009).

3. Research Methodology

The unit of analysis of current study is stock exchange hence; it is the main entity under study. Other types of unit of analysis are inflation, Foreign Direct Investment, Gross Domestic Production, and savings.

Time horizon

Current study was a longitudinal study as samples were taken from time periods of ten years among 2000 to 2014. Similarly, data were taken from three stock exchanges of emerging countries and three stock exchanges of developed countries in ten year time duration.

Stock exchanges	Stock Indices
Brazil stock exchange	BM& F Bovespa
National stock exchange of India	CNX Nifty
The Shanghai Stock Exchange	SSE Composite 50
London stock exchange	FTSE 100
New York stock exchange	S&P 100
Frankfurt Stock Exchange	DAX 100

3.7   Data Analysis Technique
Time series analysis is used for analysis of data of used macro-economic variables and similarly, descriptive and inferential statistics are used for analyzing of ten years data. Hence, two main econometric tests are used for this test like Ordinary Least Square (OLS) for checking the relationship between macroeconomic variables and stock market

performance and second model was Granger Causality Test to investigate the relationship between stock market performance and individual macroeconomic variable.

4. Results And Discussions

Current study resulst are explaiend and interperated in a s step wise explanation and application are described with the help of statistical tools. However, the data used in current study is secondary data covering all the macroeconomic variabels and stock exchanges and sources used are Reserve Bank of India, Trading Economic, International Monetary Fund, World Bank, Yahoo fiance, and stock exchanges of the concerning countries.

4.1   Descriptive statistics

The descriptive statistics of all the macro-economic variables and stock exchanges were

analyzed in details.

Table 4.1 Descriptive statistics of National stock exchange of India (NIFTY 50)

	NIFTY	SAV	INF	GDP	FDI
Mean	8.680774	3.511835	2.008882	2.007106	23.27384
Median	8.685692	3.526361	2.128232	2.066863	23.69295
Maximum	9.058150	3.610918	2.484907	2.332144	23.99618
Minimum	7.921209	3.433987	1.335001	1.360977	20.82281
Std. Dev.	0.243148	0.046234	0.368191	0.284373	0.909571
Skewness	-1.086736	0.365180	-0.505750	-0.983444	-1.694730
Kurtosis	4.352981	2.949633	2.078830	3.064021	5.036055
Jarque-Bera	36.04997	2.947797	10.29428	21.30009	85.98680
Probability	0.000000	0.229031	0.005816	0.000024	0.000000
Sum	1145.862	463.5622	265.1724	264.9380	3072.147
Sum Sq. Dev.	7.744864	0.280022	17.75894	10.59371	108.3789
Observations	132	132	132	132	132

Table 4.2 explained the descriptive statistics of Brazil stock exchange (BOVESPA) that illustrated mean, median, maximum, minimum, standard deviation, skewness, kurtosis, Jarque-Bera, probability, summation, sum square deviation, and total number of observations. Moreover, these descriptive statistics of the BOVESPA and four macroeconomic variables like savings, inflation, gross domestic production (GDP), and foreign direct investment (FDI) and their values are given below.

Table 4.4 Descriptive statistics of London stock exchange (FTSE 100)

	FTSE	SAV	INF	GDP	FDI
Mean	8.628310	2.655370	0.889029	0.712701	25.01136
Median	8.653610	2.639057	0.832909	0.916291	24.77215
Maximum	8.831201	2.833213	1.504077	1.435085	26.25845
Minimum	8.250646	2.484907	0.262364	-0.693147	23.40066
Std. Dev.	0.140091	0.136959	0.349090	0.552470	0.951061
Skewness	-0.603415	0.102835	-0.094640	-1.326935	0.040429
Kurtosis	2.533705	1.518883	2.400566	4.275720	1.721038
Jarque-Bera	9.206290	12.29803	2.173311	47.68766	9.032543
Probability	0.010020	0.002136	0.337343	0.000000	0.010930
Sum	1138.937	350.5088	117.3518	94.07647	3301.499
Sum Sq. Dev.	2.570924	2.457269	15.96415	39.98421	118.4917
Observations	132	132	132	132	132

Table 4.5 explained the descriptive statistics of New York stock exchange (S&P 500) that illustrated mean, median, maximum, minimum, standard deviation, skewness, kurtosis, Jarque-Bera, probability, summation, sum square deviation, and total number of observations. Moreover, these descriptive statistics of the S&P 500 and four macroeconomic variables like savings, inflation, gross domestic production (GDP), and foreign direct investment (FDI) and their values are given below.

4.3 Augmented Dickey Fuller (ADF) Test

Augmented Dickey Fuller (ADF) test is an extension of Dickey Fuller (DF) test. Therefore, before measuring linear regression and Granger Causality test, we need to test Unit Root in order to check the stationary of data. Hence, there are various Unit root test and Augmented Dickey Fuller (ADF) is one among them.

Table 4.7 Augmented Dickey Fuller (ADF) test

Stock Exchanges	P Value			
	FDI	Growth rate	Savings	Inflation rate
Brazil Stock exchange (BOVESPA)	0.021	0.034	0.012	0.997
National Stock exchange of India (NIFTY)	0.041	0.023	0.022	0.817
China Stock exchange (SSE)	0.021	0.008	0.032	0.987
London stock exchange (FTSE)	0.031	0.018	0.014	0.497
New York Stock exchange (NYSE)	0.021	0.013	0.022	0.927
Frankfurt Stock exchange (DAX)	0.011	0.035	0.013	0.697

The results from table 4.2 showed the summary of P value that is necessary for hypotheses acceptance and rejection. Therefore, the "P value" of three hypotheses had a less than 0.05 that shows the acceptance of hypotheses while on the other hand; inflation rate had a "P value" of more than 0.05 that is helping to accept hypothesis.

4.4 Ordinary least squares (OLS) Test

Ordinary least square (OLS) test was the last method to explore the effect of macroeconomic variables on stock market performance. It was second step after doing co-integration test which was applied to measure variables impact through Ordinary Least Square.

Hence, OLS equation for Brazil stock exchange is a follow. However, D is first difference and DD indicates second differences and equation and table are summarized as below:

$Dlog$ (BM&F Bovespa)$_t =$
$\alpha_1 + \beta_1 Dlog(FDI)_t + \beta_2 Dlog(Growthrate)_t + \beta_3 DDlog(CPI)_t + \beta_4 Dlog(Savings)_t + \varepsilon_{it}$

Table 4.8 Ordinary Least squares for Brazil stock exchange (BM&F Bovespa)

Stock Exchanges	OLS		
	Coefficients	t-statistics	Probability
DFDI	0.020543	1.035418	0.6956
D Growth rate	0.001944	1.631155	0.6666
DDCPI	0.015519	-2.749685	0.6609
D savings	0.000907	6.252600	0.4136
R squared	0.415963		
Adjusted R square	0.411401		
F statistics	91.16434		
N (*) sign means significant at 5% critical level.	132		

OLS equation for London stock exchange (FTSE 100) is a follow. However, D is first difference and DD indicates second differences and equation and table are summarized as below.

$Dlog$ (FTSE 100)$_t =$
$\alpha_1 + \beta_1 Dlog(FDI)_t + \beta_2 Dlog(Growthrate)_t + \beta_3 DDlog(CPI)_t + \beta_4 Dlog(Savings)_t + \varepsilon_{it}$

Table 4.11 Ordinary Least squares for the London stock exchange (FTSE 100)

Stock Exchanges	OLS		
	Coefficients	**t-statistics**	**Probability**
DFDI	0.02543	1.035418	0.4115
D Growth rate	0.10944	1.631155	0.5339
DDCPI	0.01519	-2.749685	0.5987
D savings	0.01277	6.25260	0.5410
R squared	0.40720		
Adjusted R square	0.633739		
F statistics	210.8419		
N (*) sign means significant at 5% critical level.	132		

4.5 Granger Causality test

The Granger Causality test is a statistical hypothesis test to determine whether one time series is significant in forecasting another. This test aims at determining whether past values of a variable help to predict changes in another variable (Granger, 1988). In addition, it also says that variable Y is Granger caused by variable X if variable X assists in predicting the value of variable Y (Sarbapriya, 2012).

We can conclude that there is a unidirectional relationship between inflation rate (CPI) and stock price since we reject the null hypothesis that DLCPI does not Granger Cause DLOMXS30; the p-value (1,75%) is less that the critical value (5%). This means that that inflation Granger causes stock price. The overall Granger Causality test reveals that only inflation granger causes the stock prices while the stock prices do not affect any of the four macroeconomic variables included in the research.

Table 4.14National stock Exchange of India (NIFTY 50)

Pair wise Granger Causality Tests
Date: 02/24/16   Time: 00:39
Sample: 2004 2014
Lags: 1

Test for Granger Causality between Stock Index and the Macroeconomic Variables			
Null Hypothesis	**Obs**	**F-Statistic**	**Probability**
RSAV does not Granger Cause RNIFTY RNIFTY does not Granger Cause RSAV	132	0.16975 0.53489	0.6810 0.4659
RINF does not Granger Cause RNIFTY RNIFTY does not Granger Cause RINF	132	0.09778 0.10889	0.7550 0.7420
RGDP does not Granger Cause RNIFTY RNIFTY does not Granger Cause RGDP	132	0.38340 0.00488	0.5369 0.9444
RFDI does not Granger Cause RNIFTY RNIFTY does not Granger Cause RFDI	132	0.10665 0.06333	0.7445 0.8017
RINF does not Granger Cause RSAV RSAV does not Granger Cause RINF	132	0.00173 0.00227	0.9669 0.9621
RGDP does not Granger Cause RSAV RSAV does not Granger Cause RGDP	132	0.00025 0.00770	0.9874 0.9978
RFDI does not Granger Cause RSAV RSAV does not Granger Cause RFDI	132	0.00149 0.00134	0.9693 0.9709
RGDP does not Granger Cause RINF RINF does not Granger Cause RGDP	132	4.6E-05 1.2E-05	0.9946 0.9972
RFDI does not Granger Cause RINF RINF does not Granger Cause RFDI	132	0.00356 0.00358	0.9525 0.9524
RFDI does not Granger Cause RGDP RGDP does not Granger Cause RFDI	132	1.5E-05 4.5E-05	0.9969 0.9947

Table 4.14 explained that granger causality of national stock exchange of India with taken sample from 2004 to 2014. The total number of observations was 132 and each macroeconomic variable value of Granger causality is also given in tables with F statistics and probabilities.

Table 4.17 London Stock Exchange (FTSE100)

Pair wise Granger Causality Tests
Date: 02/24/16   Time: 00:39
Sample: 2004 2014
Lags: 1

Test for Granger Causality between Stock Index and the Macroeconomic Variables			
Null Hypothesis	**Obs**	**F-Statistic**	**Probability**
RSAV does not Granger Cause RFTSE RFTSE does not Granger Cause RSAV	132	0.15901 0.53489	0.8963 0.8923
RINF does not Granger Cause RFTSE RFTSE does not Granger Cause RINF	132	0.09448 0.10889	0.8763 0.7534
RGDP does not Granger Cause RFTSE RFTSE does not Granger Cause RGDP	132	0.38230 0.00488	0.5369 0.9870
RFDI does not Granger Cause RFTSE RFTSE does not Granger Cause RFDI	132	0.10665 0.06333	0.7498 0.8017
RFTSE does not Granger Cause RSAV RSAV does not Granger Cause RFTSE	132	0.00223 0.00237	0.7681 0.7621
RGDP does not Granger Cause RSAV RSAV does not Granger Cause RGDP	132	0.00025 0.00770	0.8793 0.8790
RFDI does not Granger Cause RSAV RSAV does not Granger Cause RFDI	132	0.00449 0.00134	0.8769 0.8709
RGDP does not Granger Cause RINF RINF does not Granger Cause RGDP	132	.000465 .002105	0.9946 0.8972
RFDI does not Granger Cause RINF RINF does not Granger Cause RFDI	132	0.00354 0.00358	0.9534 0.5732
RFDI does not Granger Cause RGDP RGDP does not Granger Cause RFDI	132	.001205 .004505	0.8954 0.8472

Table 4.17 explained that granger causality of London stock exchange (FTSE 100) with taken sample from 2004 to 2014. The total number of observations was 132 and each macroeconomic variable value of Granger causality is also given in tables with F values and probabilities.

5.   Conclusion And Recommendation
5.1   Conclusion

The stock market that is well organized mobilizes the activities and savings of investment projects that leads the economic activities of the countries. Therefore, the current study investigated that either change in macroeconomic variables can affect stock market prices of emerging and developed countries. The results revealed that foreign direct investment (FDI), growth rate, and saving had a positive relation with market performance while inflation (CPI) had negative relationship with market performance. Similarly, negative relationship between stock market and inflation may be well explained through the funds that float by inflation by increasing supply and unaffected demand in stock market. It was concluded that unaffected demand put downward pressure on stock market performance and hence it is very significant for investors while investing in stock market to follow consumer price inflation (CPI) as high inflation rate always make much difficult condition in market to investment. On contrary, positive relationship was found between GDP growth rate and stock market performance in emerging and developed countries as it improving GDP showed a good index for investor to invest in stock market.

5.2   Recommendations

Current study recommends the appropriate monetary policy measure should be taken by respective regulatory bodies to control the unanticipated inflations for controlling the volatility of stock market. In this regards, industrial production can help in developing capital of stock market so policy makers and concerned authority should devise polices which supports and enhances stock prices via industrial production for the economic growth of the countries. Particularly, developed countries are much strong in the consistency of their fiscal and monetary policies whereas, emerging countries have also proved themselves up to a reasonable point but it is dire need of developing countries to bring consistencies in their polices so that economic growth can persists in a better way.

As stock market is the mirror of any economy and it always opened new arenas for stock market. It is also clear that macroeconomic factor such as industrial production, consumer index price, interest rate, inflation rate, GDP growth rate, and exchange rate etc is main decisive factors in purchasing share of any company and investors have firm beliefs on it. It is also recommended that regulatory bodies should follow appropriate steps to overcome and reduce stock market development for better financial infrastructure in operating stock market. Academicians and practitioners believe that progress in above mentioned areas will increase stock market sustainability and economic development of these countries in coming decades.

References

Abugri, B. A. (2008). Empirical relationship between macroeconomic volatility and stock returns: Evidence from Latin American markets. *International Review of Financial Analysis, 17*(2), 396-410.

Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. *Handbook of economic growth, 1*, 385-472.

Acemoglu, D., & Robinson, J. A. (2013). Economics versus politics: Pitfalls of policy advice: National Bureau of Economic Research.

Adam, A. M., & Siaw, F. (2010). Does financial sector development cause investment and growth? empirical analysis of the case of Ghana: Citeseer.

Adam, A. M., & Tweneboah, G. (2009). Foreign direct investment and stock market development: Ghana's evidence. *International Research Journal of Finance and Economics, 26*, 178-185.

Akerlof, G. A., & Shiller, R. J. (2010). *Animal spirits: How human psychology drives the economy, and why it matters for global capitalism*: Princeton University Press.

Alam, M. M., & Uddin, M. G. S. (2009). Relationship between interest rate and stock price: empirical evidence from developed and developing countries. *International Journal of Business and Management, 4*(3), 43.

Alfaro, L., Antràs, P., Chor, D., & Conconi, P. (2015). Internalizing Global Value Chains: A Firm-Level Analysis: National Bureau of Economic Research.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and economic growth: the role of local financial markets. *Journal of international economics, 64*(1), 89-112.

Ali, M. B. (2011). Impact of micro and macroeconomic variables on emerging stock market return: A case on Dhaka Stock Exchange (DSE). *Interdisciplinary journal of research in business, 1*(5), 08-16.

Amiti, M., & Weinstein, D. E. (2009). Exports and financial shocks: National Bureau of Economic Research.

Arouri, M. E. H., & Rault, C. (2012). Oil prices and stock markets in GCC countries: empirical evidence from panel analysis. *International Journal of Finance & Economics, 17*(3), 242-253.

Asab, N. A., Cuestas, J. C., & Montagnoli, A. (2015). Inflation targeting or Exchange Rate Targeting: Which Framework Supports The Goal of Price Stability in Emerging Market Economics?

Badar, M., & Javid, A. Y. (2013). Impact of macroeconomic forces on nonperforming loans: An empirical study of commercial banks in Pakistan. *wseas Transactions on Business and Economics, 10*(1), 40-48.

Bahramitash, R., & Esfahani, H. S. (2016). *Political and Socio-Economic Change in the Middle East and North Africa: Gender Perspectives and Survival Strategies*: Palgrave Macmillan.

Bandura, R. (2008). A survey of composite indices measuring country performance: 2008 update. *New York: United Nations Development Programme, Office of Development Studies (UNDP/ODS Working Paper)*.

Barberis, N., Shleifer, A., & Vishny, R. (1998). A model of investor sentiment. *Journal of financial economics, 49*(3), 307-343.

Barnor, C. (2014). The Effect of Macroeconomic Variables on Stock Market Returns in Ghana (2000-2013).

Égert, B., & MacDonald, R. (2006). Monetary transmission mechanism in transition economies: surveying the surveyable.

Elbannan, M. A. (2015). The capital asset pricing model: an overview of the theory. *International Journal of Economics and Finance, 7*(1), 216.

Erdogan, E., & Ozlale, U. (2005). Effects of macroeconomic dynamics on stock return: The case of the Turkish stock exchange market. *Journal of Economic Corporation, 26*(2), 69-90.

Errunza, V., & Hogan, K. (1998). Macroeconomic determinants of European stock market volatility. *European Financial Management, 4*(3), 361-377.

Ewah, S. O., Esang, A. E., & Bassey, J. U. (2009). Appraisal of capital market efficiency on economic growth in Nigeria. *International Journal of Business and Management, 4*(12), 219.

Ewing, B. T., & Malik, F. (2013). Volatility transmission between gold and oil futures under structural breaks. *International Review of Economics & Finance, 25*, 113-121.

Fama, E. F. (1980). Banking in the Theory of Finance. *Journal of Monetary Economics, 6*(1), 39-57.

Fama, E. F. (1981). Stock returns, real activity, inflation, and money. *The American Economic Review, 71*(4), 545-565.

Fama, E. F., & Schwert, G. W. (1977). Asset returns and inflation. *Journal of financial economics, 5*(2), 115-146.

Fang, C.-R. (2010). The impact of oil price shocks on the three BRIC countries' stock prices. *Department of Economics, National Cheng-Chi University, Taiwan*.

Fang, L., & Peress, J. (2009). Media coverage and the cross-section of stock returns. *The Journal of Finance, 64*(5), 2023-2052.

Fayyad, A., & Daly, K. (2011). The impact of oil price shocks on stock market returns: comparing GCC countries with the UK and USA. *Emerging Markets Review, 12*(1), 61-78.

Filis, G. (2010). Macro economy, stock market and oil prices: Do meaningful relationships exist among their cyclical fluctuations? *Energy Economics, 32*(4), 877-886.

Flannery, M. J., & Protopapadakis, A. A. (2002). Macroeconomic factors do influence aggregate stock returns. *Review of Financial Studies, 15*(3), 751-782.

Gan, C., Lee, M., Yong, H. H. A., & Zhang, J. (2006). Macroeconomic variables and stock market interactions: New Zealand evidence. *Investment Management and Financial Innovations, 3*(4), 89-101.

Garcia, V. F., & Liu, L. (1999). Macroeconomic determinants of stock market development. *Journal of Applied Economics, 2*(1), 29-59.

Gay Jr, R. D. (2011). Effect of macroeconomic variables on stock market returns for four emerging economies: Brazil, Russia, India, and China. *International Business & Economics Research Journal (IBER), 7*(3).

Geetha, C., Mohidin, R., Chandran, V. V., & Chong, V. (2011). The relationship between inflation and stock market: Evidence from Malaysia, United States and China. *International journal of economics and management sciences, 1*(2), 1-16.

Gereffi, G., & Wyman, D. L. (2014). *Manufacturing miracles: paths of industrialization in Latin America and East Asia*: Princeton University Press.

Geske, R., & Roll, R. (1983). The fiscal and monetary linkage between stock returns and inflation. *The Journal of Finance, 38*(1), 1-33.

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Table 4.3 Descriptive statistics of Shanghai stock exchange (SSE 100)

	SSE	SAV	INF	GDP	FDI
Mean	7.711187	3.849896	0.601599	2.283393	25.69676
Median	7.732299	3.912023	0.693147	2.261763	25.65842
Maximum	8.691948	3.951244	1.686399	2.653242	26.39634
Minimum	6.966722	3.295837	-1.203973	1.987874	24.85214
Std. Dev.	0.378718	0.179538	0.677150	0.200085	0.484323
Skewness	0.047774	-2.644400	-1.330416	0.221732	-0.019935
Kurtosis	2.888630	8.400035	5.298728	2.162525	1.899593
Jarque-Bera	0.118430	314.2248	68.00298	4.939133	6.668673
Probability	0.942504	0.000000	0.000000	0.084622	0.035638
Sum	1017.877	508.1862	79.41103	301.4079	3391.973
Sum Sq. Dev.	18.78902	4.222623	60.06771	5.244452	30.72845
Observations	132	132	132	132	132

Table 4.5 Descriptive statistics of New York stock exchange (S&P 500)

	S&P	SAV	INF	GDP	FDI
Mean	7.176832	2.818191	0.737651	0.710794	25.98384
Median	7.161774	2.833213	0.993252	0.875469	26.17001
Maximum	7.634124	2.944439	1.335001	1.335001	26.55240
Minimum	6.599993	2.639057	-0.916291	-1.203973	24.77348
Std. Dev.	0.203241	0.093610	0.614087	0.651543	0.518108
Skewness	0.092657	-0.559588	-1.614349	-2.197406	-0.910060
Kurtosis	3.258717	2.032755	5.043274	7.002491	3.135636
Jarque-Bera	0.557016	12.03464	80.29707	194.3386	18.3218
Probability	0.756912	0.002436	0.000000	0.000000	0.00005
Sum	947.3418	372.0012	97.36992	93.82486	3429.866
Sum Sq. Dev.	5.411214	1.147927	49.40044	55.61055	35.16508
Observations	132	132	132	132	132

Table 4.10 Ordinary Least squares for the Shanghai Stock Exchange (SSE50)

Stock Exchanges	OLS		
	Coefficients	t-statistics	Probability
DFDI	0.031543	2.035418	0.415
D Growth rate	0.023944	1.631155	0.6322
DDCPI	0.035319	-2.749685	0.6687
D savings	0.010277	9.252600	0.5990
R squared	0.90720		
Adjusted R square	0.63739		
F statistics	168.8429		
N (*) sign means significant at 5% critical level.	132		

Table 4.12 Ordinary Least squares for the New York stock exchange (S&P 100)

Stock Exchanges	OLS		
	Coefficients	t-statistics	Probability
DFDI	0.020543	1.235418	0.3315
D Growth rate	0.031944	1.632255	0.5232
DDCPI	0.035519	-2.629685	0.5987
D savings	0.000277	6.252600	0.6720
R squared	0.910720		
Adjusted R square	0.869739		
F statistics	143.8429		
N(*) sign means significant at 5% critical level.	132		

Table 4.16 Shanghai Stock Exchange (SSE100)

Pair wise Granger Causality Tests
Date: 02/24/16   Time: 00:39
Sample: 2004 2014
Lags: 1

Test for Granger Causality between Stock Index and the Macroeconomic Variables			
Null Hypothesis	**Obs**	**F-Statistic**	**Probability**
RSAV does not Granger Cause RSSE RSSE does not Granger Cause RSAV	132	0.15901 0.53489	0.8792 0.8709
RINF does not Granger Cause RSSE RSSE does not Granger Cause RINF	132	0.09448 0.10889	0.7640 0.7334
RGDP does not Granger Cause RSSE RSSE does not Granger Cause RGDP	132	0.38340 0.00488	0.5369 0.9870
RFDI does not Granger Cause RSSE RSSE does not Granger Cause RFDI	132	0.10665 0.06333	0.7498 0.8017
RSSE does not Granger Cause RSAV RSAV does not Granger Cause RSSE	132	0.00173 0.00227	0.9981 0.9621
RGDP does not Granger Cause RSAV RSAV does not Granger Cause RGDP	132	0.00025 0.00770	0.9993 0.9190
RFDI does not Granger Cause RSAV RSAV does not Granger Cause RFDI	132	0.00149 0.00134	0.8769 0.8709
RGDP does not Granger Cause RINF RINF does not Granger Cause RGDP	132	.000465 .002005	0.9946 0.9972
RFDI does not Granger Cause RINF RINF does not Granger Cause RFDI	132	0.00354 0.00358	0.9534 0.8732
RFDI does not Granger Cause RGDP RGDP does not Granger Cause RFDI	132	.001505 .004505	0.8934 0.8732

Table 4.18 New York Stock Exchange (S&P100)

Pair wise Granger Causality Tests
Date: 02/24/16   Time: 00:39
Sample: 2004 2014
Lags: 1

Test for Granger Causality between Stock Index and the Macroeconomic Variables			
Null Hypothesis	**Obs**	**F-Statistic**	**Probability**
RSAV does not Granger Cause RS&P RS&P does not Granger Cause RSAV	132	0.18701 0.53489	0.9763 0.9823
RINF does not Granger Cause RS&P RS&P does not Granger Cause RINF	132	0.09448 0.10889	0.8763 0.6534
RGDP does not Granger Cause RS&P RS&P does not Granger Cause RGDP	132	0.38230 0.00488	0.3469 0.3470
RFDI does not Granger Cause RS&P RS&P does not Granger Cause RFDI	132	0.10665 0.06333	0.3498 0.3417
RS&P does not Granger Cause RSAV RSAV does not Granger Cause RS&P	130	0.00223 0.00237	0.3481 0.3421
RGDP does not Granger Cause RSAV RSAV does not Granger Cause RGDP	130	0.00025 0.00770	0.3493 0.9890
RFDI does not Granger Cause RSAV RSAV does not Granger Cause RFDI	132	0.00449 0.00134	0.8769 0.8709
RGDP does not Granger Cause RINF RINF does not Granger Cause RGDP	132	.000465 .002105	0.9446 0.9472
RFDI does not Granger Cause RINF RINF does not Granger Cause RFDI	132	0.00354 0.00358	0.9434 0.9432
RFDI does not Granger Cause RGDP RGDP does not Granger Cause RFDI	132	.001205 .004505	0.9454 0.9472