



AN EMPIRICAL STUDY ON PERFORMANCE OF EMERGING AND DEVELOPED STOCK MARKETS WITH REFERENCE TO INDIAN STOCK MARKET.

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ABSTRACT

Indian stock market being an important part of emerging markets and the economy attracts foreign capital which enhances the fluctuations. It is very important to understand the behavior of the stock market and its dependency with other developing and developed market. So the study aims to examine the relationship between the developing and developing countries stock market. In the study descriptive statistics and correlation is been used. From this study, the result indicates that most of the indices have positive correlation with each other and few of them have negative correlation. In conclusion, there is some relationship between all the market indices.

Keywords: Stock Exchanges, Relationship, Economics, Global, Volatility, Stock.

INTRODUCTION

At the time of allocation of the funds in internationally diversified portfolio, an investor would like to compare performance and risk across different economies. In recent years, new terms have emerged to describe the largest developing countries such as BRIC that stands for Brazil, Russia, India, and China, along with BRICET (BRIC + Eastern Europe and Turkey), BRICS (BRIC + South Africa), BRICM (BRIC + Mexico), BRICK (BRIC + South Korea), Next Eleven (Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, South Korea, Turkey, and Vietnam) and CIVETS (Colombia, Indonesia, Vietnam, Egypt, Turkey and South Africa). These countries do not share any common agenda, but some experts believe that they are enjoying an increasing role in the world economy and on political platforms. The Big Emerging Market (BEM) economies are (alphabetically ordered): Brazil, China, Egypt, India, Indonesia, Mexico, Philippines, Poland, Russia, South Africa, South Korea and Turkey. The benefit of internationally diversified portfolio can be enjoyed only when there is less correlation between international stock markets.

Further, while constructing internationally diversified portfolio of securities, the correlation in the returns of stocks from two different economies required to be calculated. Some studies supported that there is less dependency between Asian markets themselves and between Asian and European markets. Booth & Koutmos (1998) found that in European stock markets, the dependence is high during calm time period and low during crisis. Goldman Sachs argues that the economic potential of Brazil, Russia, India and China is such that they could become among the four most dominant economies by the year 2050. The thesis was proposed by Jim O'Neill,

Global economist at Goldman Sachs. Peiro et al., (1998) examined New York is very influential market which is double than Tokyo and triple than Frankfurt. Tokyo is very sensitive more than double of New York. It is believed that emerging

markets and developed markets have long run correlations and hence, less portfolio diversification investment opportunities available for international investors.

Syriopoulos and Roumpis (2009) examined whether some interdependence is found between South Eastern European economies stock markets and developed markets US and Germany. A long run relationship exist but still investors who want to take the benefit out of diversified portfolio can go for short term investment. Gilmore and McManus (2002) investigated the long run relationship between US equity market and other Central European stock markets. It was seen that these markets were not integrated in the long run. Singh et al. (2010) tried to find out the historical volatility of the CNX S&P Nifty and Nikkie 225 stock exchanges of India and Japan respectively. They also made an effort to know the impact of Treasury bond rates changes on insurance companies in Japan and banking companies in India.

Sinha (2007) focused on equity market volatility in 13 developed and emerging markets, including India for a 15 year period from 1985 to 1999. He concluded that Asian markets are more volatile than the developed markets. Sellin (1996) investigated the relationship between a price index of Swedish stocks and the net purchases of Swedish stocks by foreign investors, And found that net purchases of stocks by foreign investors lead to temporary price effects in a small stock market. Rao et al. (1999) conducted a study of developed market by taking the data for a period of eight years, i.e., 1990 to 1998. They suggested that FII investments would help the stock markets directly through widening investor base and indirectly by compelling local authorities to improve the trading systems.

There are evidences which prove that the flow of information found in macroeconomic news and any other public information having a direct impact on stock return volatility (Ross, 1989; Andersen and Bollerslev, 1998; Andersen et al., 2006, among others). Here we identify to what extent Indian

stock market are correlated with International stock markets. For this purpose, eleven stock markets are selected from emerging markets and developed markets. Brazil, Russia, India and China countries collectively would play an increasingly important role in the global economy. Goldman Sachs (2003) predicted that over the next 50 years, the Brazil, Russia, India and China economies could become a major force in the world economy, and that by 2050 the only developed economies among the six-largest global economies would be the US and Japan in US dollar terms.

According to the IMF report USA, UK, Australia, Japan, Germany, Hongkong stock market and Singapore are among the 36 countries which are classified as advanced economies. So, Brazil, Russia, India and China countries as emerging economies and seven developed economies named as USA, UK, Australia, Japan, Germany, Hongkong stock market and Singapore are taken to understand their behavior. The data for India stock market is collected from the official websites of National Stock Exchange and Bombay Stock Exchange i.e. www.nseindia.com and www.bseindia.com. The data of other countries is collected from www.moneycontrol.com, www.allstocks.com and www.yahoofinance.com. Daily closing prices are converted into returns.

LITERATURE REVIEW

The integration between developed and emerging economies is increasing with the passage of time. As they have much gain from each other success as one nation succeed and other may fail in the effort this while create the interdependence between the countries.

Wong et al., (2004) highlighted that there was a trend of increasing interdependence between most of developed markets and emerging markets after the 1987 market crash. After the 1997 financial crisis, the interdependence between these have gone more intensified resulted into international diversification benefits reduction.

Bose (2005), found whether there are any common forces which driving the stock index of all economies or there was some country specific factors which controlling the each individual country's economy.

Chattopadhyay and Behera (2006) found that contrary to general belief, Indian stock market is not co-integrated with the developed market as yet. Of course, some short-term impact does exist, although it was found to be unidirectional for obvious reasons. That is to say, the developed stock markets, viz., USA, UK and Hong Kong stock markets Granger caused the India stock market but not vice versa. However, the study did not find any causality between the Japanese stock market and Indian stock market. It was derived from the study that although some positive steps have been taken up, which were responsible for the substantial improvement of the Indian stock market, these were perhaps not sufficient enough to become a matured one and hence not integrated with the developed stock markets so far.

Dhankar and Chakraborty (2007) investigated the presence of non-linear dependence in three major markets of South Asia, India, Sri Lanka and Pakistan. It was realized that merely identifying non-linear dependence was not enough. The

application of the BDS test strongly rejects the null hypothesis of independent and identical distribution of the return series as well as the linearly filtered return series for all the markets under study.

Mukherjee (2007) captured to test the correlation between the various exchanges to prove that the Indian markets have become more integrated with its global counterparts and its reaction are in tandem with that are seen globally. It is validated that in the later time periods, the influence of other stock markets increases on BSE or NSE, but at a very low almost insignificant level. It can be safely said that the markets do react to global cues and any happening in the global scenario be it macroeconomic or country specific affect the various markets.

Mukherjee and Mishra (2007) revealed that apart from exhibiting significant annual contemporaneous measures or same day inter-market relationship among India and most of the other foreign countries, the contemporaneous feedback statistics also reveals an increasing tendency in the degree of integration among the market over a period of time, leading to a greater co-movements and therefore higher market efficiency at the international scenario.

Kumar and Dhankar (2009) made efforts to examine the cross correlation in stock returns of South Asian stock markets, their regional integration and interdependence on global stock market. It is also examined what are the important aspects of investment strategy when investment decisions are made under risk and uncertainty. Its generalized models significantly explain the conditional volatility in all stock markets in question.

Ranpura et al. (2011) examined the short-run causal linkages among equity markets to better understand how shocks in one market are transmitted to other markets and also try to study co-movement of Indian stock market index with developed as well as developing countries' stock market indices. It can be interpreted that SENSEX is interdependent on Developed economies stock markets except NIKKEI

Paramati et al. (2012) aimed to investigate the long-run relationship between Australia and three developed (Hong Kong, Japan and Singapore) and four emerging (China, India, Malaysia and Russia) markets of Asia. While bivariate Johansen co-integration test provides results in supporting the long-run relationship between Australia-Hong Kong, Australia-India, and Australia-Singapore in the post-crisis period, the causal relationship from Australia to Asian markets disappears after the crisis. Results of VAR models demonstrated that there is no consistent lead-lag association between the observed markets.

Singh and Sharma (2012) examined the inter linkages of Brazil, Russia, India and China. The results revealed that there are visible effects of stock exchanges on each other. Russian, Indian and Brazilian stock markets affect each other and also effected by each other but Chinese stock market was not affected by these markets and these markets were affected by Chinese stock market. Ahmad et al., (2005) revealed that no long-term relationship exist between Indian stock market with US and Japanese stock markets.

Dasgupta (2014) found only one co-integration, i.e., long-run

relationships and also short-run bidirectional Granger relationships in between the Indian and Brazilian stock markets. It was found that the Indian stock market has strong impact on Brazilian and Russian stock markets. The interdependencies (mainly on India and China) and dynamic linkages were also evident in the BRIC stock markets. Overall, it was found that BRIC stock markets are the most favorable destination for global investors in the coming future and among the BRIC the Indian stock market has the dominance. On the basis of above, it is seen that a gap is prevalent. This gave an origin to the objective of whether Indian stock market is interdependent on international stock markets or not so that this gap can be filled.

RESEARCH METHODOLOGY

Indian Stock Market is one of the most dynamic and efficient markets in Asia. According to one study, an average investor gets very less returns as compared to the average market returns. So, he is required to understand the fluctuations of markets to know the maximum profits out of his investments. Financial market information plays a vital role. So we have understood the stock market how they work, whether they have and interdependency or not among the various stock exchanges.

The objective of this study is to assess whether there is any return and relationship exists in Indian stock markets when compare to international developed and developing stock markets. The data for India stock market is collected from 1st April 2005 to 31st April 2015, The statistical tools which are used to analysis data are Time series analysis under which descriptive statistics and correlation (Pearson) are been used. The correlation coefficient of two variables in a data sample is their covariance divided by the product of their individual standard deviations. It is a normalized measurement of how the two are linearly related. Formally, the sample correlation coefficient is defined by the following formula, where s_x and s_y are the sample standard deviations, and s_{xy} is the sample covariance, (Pearson; 1930). = Ranpura (2011); Aktan et al. (2009); and Mukherjee (2011) applied correlation test for their research work.

The data is been collected from official websites of National Stock Exchange and Bombay Stock Exchange i.e. www.nseindia.com and www.bseindia.com. The data of other countries is collected from yahoofinance.com. Daily closing prices are converted into returns. The list of stock markets is given below:

Table no 1: Stock Markets and their Index

Sl.	Country	Stock markets	Indices	Abbreviation
Emerging Economies				
1	Brazil	Sao Paulo Stock Exchange	BOVESPA	BVSP
2	Russia	Russia Trading System	RTSI	RTSI
3	India	Bombay Stock Exchange	SENSEX	SENSEX
4	China	Shanghai Composite Index	SCI	SCI

Developed Economies				
5	Hong Kong stock market	Hong Kong stock market	Hang Seng	HANGSENG
6	Singapore	Straits Time Index	Straits Time	STI
7	Japan	Tokyo Stock Exchange	Nikkei 225	NIKKEI
8	Australia	Australian Stock Exchange	AORD	AORD
9	Germany	Deutheher Aktien Index	DAX	DAX
10	USA	Dow Jones	Dow Jones Industrial Average	DJIA
11	UK	Financial Time Stock Exchange	FTSE	FTSE

1. Analysis of Descriptive Statistics

- 1.1 Analysis of Descriptive Statistics (Total Period)
- 1.2 Findings and Discussions of Descriptive Statistics

2. Analysis of Correlation Test

- 2.1 Analysis of Correlation Test (Total Period)
- 2.2 Findings and Discussions of Correlation Test

Table 1.1: Descriptive Statistics of Daily Returns of selected Indices (Total Time Period: April 2005 to April 2015)

MEASURES	A O R D	B V S P	D A X	D J I	F T S E	H A N G - S E N G	N I K K E I	R T S I	S C I	S E N S E X	S T I
Mean	0.019	0.042	0.043	0.029	0.017	0.035	0.030	0.032	0.055	0.070	0.022
Median	0.055	0.049	0.096	0.056	0.007	0.052	0.052	0.088	0.055	0.100	0.044
Minimum	5.50	11.39	7.164	7.873	8.84	12.700	11.41	19.10	8.84	10.95	8.32
Maximum	8.198	14.65	11.40	11.108	9.83	14.347	14.15	22.39	9.55	17.33	8.82
Std. Dev.	1.104	1.809	1.410	1.190	1.122	1.602	1.572	2.257	1.165	1.576	1.188

Skewness	0.409	-0.190	-0.220	-0.149	-0.052	-0.319	0.326	-0.009	0.2	-0.340	0.07
Kurtosis	7.799	9.143	10.355	14.588	11.633	13.076	11.182	15.193	6.83	12.255	0.388
Observations	2454	2454	2454	2454	2454	2454	2454	2454	2454	2454	2454

(Source : Respective stock exchange)

Analysis of Descriptive Statistics (Total Period)

A summary of descriptive statistics for returns series of eleven stock markets of developed and emerging markets for the entire Period from April 2005 to April 2015 are presented in Table 1.1. This includes mean, maximum, minimum value, standard deviation, skewness, kurtosis and jarque-bera test. Table 1, showing a summary of descriptive statistics of all the stock market indices for the entire period, SENSEX, BSE index provided the highest mean return which was (7.1%) and followed by SCI (5.3%), DAX (4.3%), BVSP (4.2%), HANGSENG (3.5%), RTSI (3.2%), NIKKEI (3.0%), STI (2.5%). Australia AORD index has the lowest return of (1.9%), followed by UK index FTSE (1.7%).

The returns of developed economies range from 1.7% to 4.3%. DAX has the return of (4.3%), HANGSENG (3.5%), NIKKEI (3.0%) but STI, AORD and FTSE has less returns as compared to the returns of other developed economies which was (2.5%), (1.9%) and (1.7%). Emerging economies returns were also range at the same level so it can be concluded that there was not much difference between the returns of developed and developing countries. Standard deviation expresses fluctuation in return of various stock price indices.

Table 1.1 indicates that highest standard deviation was of RTSI (2.25) & BVSP (1.81%), SCI (1.65%), HENGSENG (1.6%) and SENSEX (1.57%). Whereas the standard deviation was lowest with AORD (1.1%), STI (1.18%), DJIA (1.19%).. So, it was seen that emerging economies have more fluctuations as compared to the developed economies. Skewness of all the indices except HANGSENG was negative. It mean that mean returns are influenced by low frequencies of high daily returns; Where Skewness of SCI was zero indicating symmetrical frequency distribution. Kurtosis was nothing but it characterizes the peak or flatness of a distribution compared with normal distribution, where positive kurtosis illustrates peak and negative kurtosis confirms flatness of a distribution. Table 1.1 showed Positive kurtosis of all the indices indicating peak charts of all the indices. Kumar and Dhankhar (2009) supported the above mentioned results.

Table 2.1: Correlation Analysis of selected Indices (Total Time Period: April 2005 to April 2015)

MEASURE	AORD	BVSP	DAX	DJIA	FTSE	HANGSENG	NIKKEI	RTSI	SCI	SENSEX	STI
AORD	1.0000	0.76	0.396	-0.52	0.201	0.183	0.371	0.181	0.793	-0.165	0.827
BVSP	0.076	1.0000	-0.52	-0.16	0.284	0.097	0.039	0.533	0.519	0.200	0.104
DAX	0.396	-0.52	1.0000	-0.15	0.490	0.285	0.680	0.241	-0.075	-0.052	0.277
DJIA	-0.052	-0.16	-0.15	1.0000	-0.08	-0.385	0.057	-0.24	-0.13	0.115	0.185
FTSE	0.201	0.284	0.490	-0.08	1.0000	-0.383	-0.142	0.476	0.384	-0.031	-0.09
HANGSENG	0.183	0.097	0.285	-0.38	-0.38	1.0000	0.074	0.162	0.308	-0.148	-0.24
NIKKEI	0.371	0.039	0.680	0.057	-0.14	0.0074	1.0000	0.913	-0.51	0.187	-0.11
RTSI	0.181	0.533	0.241	-0.24	0.476	0.162	0.913	1.0000	-0.19	0.370	0.314
SCI	0.793	0.519	-0.07	-0.13	0.384	0.308	-0.511	-0.19	1.0000	-0.301	0.164
SENSEX	-0.165	0.200	-0.05	0.115	-0.03	-0.148	0.187	0.370	-0.30	1.0000	0.267
STI	0.827	0.104	0.277	0.185	-0.09	-0.242	-0.114	0.314	0.164	0.267	1.0000

(Source: Respective stock exchanges)

2.1 Analysis of Correlation Test (Total Period)

The results of correlation test for eleven stock markets are presented in Table 2.1 the test was performed for the whole Period April 2005 to April 2015.

Table 2.1 shows that during total period, Indian stock market were closely related with India index SENSEX having positive correlation of (0.37%) with RTSI index, BVSP has positive correlation of (0.533%) with RTSI index, SCI has positive correlation of (0.793%) with AORD index , RTSI has positive correlation of (0.913%) with NIKKEI index, AORD has positive correlation of (0.913%) with STI index, DAX has positive correlation of (0.913%) with NIKKEI index, Brazil index, Mukherjee (2007) supported the above mentioned results.

Findings:

In total time period, emerging economies returns were with high returns ranging from 5.3% to 7.3% except Russia but developed economies returns were lesser ranging from 1.9 to 4.3%. Volatility in emerging economies was high. During total

period, there was lot of difference between the returns of emerging and developed economies.

Emerging economies has a return in the range of 5.1% to 10.4% except BVSP with very low return; on the other hand, developed economies have returns in range of 4.3% to 5.3% except FTSE which is at 0.07%. As far as volatility is concerned it was again high in emerging economies more than 1% whereas it was lesser than 1 in most of the developed economies. The results of period of study of emerging economies were high as compared to the returns of developed economies except Japan. Volatility was less in developed economies except Hongkong and Japan. Lucey and Muckley (2010) supported this and found that as regards diversification opportunities were concerned developed stock markets provided better long-term diversification opportunities as compared to the emerging stock markets.

Co-efficient of correlation among various indices:

The results of correlation test found that when whole period was taken, Indian stock market was closely related with Brazil and Hongkong stock market. It was least correlated with Japanese stock market. During Period of study, Indian stock market was again closely related with, Brazil stock market and Germany stock market. It was very less correlated with Chinese stock index. It was moderately correlated with DJIA and FTSE. During Period study, Indian stock market was again closely related with, Hong Kong stock market, and Brazil stock market. It was least correlated with Japanese stock market. It was moderately correlated with DJIA and FTSE. During Period of study, Indian stock market was closely related with developed economies and its correlation with emerging economies was less. Highest correlation is with Hongkong stock market. Overall, developed economies such as Hongkong, Germany, and emerging economy Brazil has correlation with Indian stock market. Kumar & Dhankar (2009) & and Ranpura et al., 2012 supported the above results

Conclusion

Indian stock market has a short-run relationship with the developed economies but no long-run relationship exists. After 1991, Indian stock market has grown significantly due to various economic measures taken by the government. After liberalization, foreign capital was invited into different sectors resulted into market integration. But, even after this, lots of hurdles during investment in the stock market. Individual investors can not invest in the foreign markets also. In the nutshell, with the growth of technical facilities in the capital market and removal of investment barriers, the integration of Indian stock market along with international stock markets will increase in future significantly.

REFERENCES

- [1] Wong, W. K., Penm, J., Terrell, R. D. and Lim K. Y. C. (2004). The relationship between stock markets of major developed economies and Asian emerging markets. *Journal of Applied Mathematics and Decision Sciences* 8 (4), 201-218.
- [2] Bose, S. (2005). Indian, US and Asian Stock Markets. *ICRA Bulletin: Money and Finance* , 49-72.
- [3] Ahmad, K. M., Ashraf, S., & Ahmed, S. (2005). Is the Indian Stock Market Integrated with the US and Japanese Markets: An Empirical Analysis. *South Asia Economic Journal* , 6, 193-207
- [4] Dhankar, R. S., & Chakraborty, M. (2007). Non-Lineariies and GARCH Effects in the Emerging Stock Markets of South Asia. *Vikalpa-The Journal of Decision Makers* , 32 (3), 23-37.
- [5] Mukherjee, D. (2007). Comparative Analysis of Indian Stock Market with Internaional Markets. *Great Lakes Herald* , 1, 40-69.
- [6] Mukherjee, K., & Mishra, R. K. (2007). International Stock Markets Integration and its Economic Determinants:A Study of Indian and World Equity Markets. *Vikalpa-The Journal of Decision Makers* , 32, 29-44.
- [7] Kumar, R., & Dhankar, R. S. (2009). Asymmetric Volatility and Cross Correlations in Stock Returns under Risk and Uncertainty. *Vikalpa-The Journal of Decision Makers* , 34, 25-36.
- [8] Ranpura, D., Patel, B. K., & Patel, N. (2011). Study of Co-Movement and Interdependence of Indian Stock Market with Selected Foreign Stock Markets. *AJRBF*, 1 (3), 74-92.
- [9] Paramati, S. R., Gupta, R., & Roca, E. (2012). International Equity Markets Integration: Evidence from Global Financial Crisis and Structural Breaks. at:<http://www.cb.cityu.edu.hk/CONFERENCE/EMRM2012/doc/PARAMATI%20Sudharshan%20Redd y.pdf>.
- [10] Singh, S., & Sharma, G. D. (2012). Inte- Linkages between Stock Exchanges: A study of BRIC Nations. *International Journal of Marketing, Financial Servies, Management Research*
- [11] Dasgupta, R. (2014). Integration and Dynamic Linkages of Indian Stock Market with BRIC-An Empirical Study. *Asian Economic and Financial Review* , 4 (6), 715-73