Stock Market Integration of India and USA: A Study on Small and Medium Enterprises

Professor Murugesan Selvam
Head
Department of Commerce and Financial Studies
Bharathidasan University
Tiruchirappalli, Tamil Nadu-620 024, India
E- Mail ID: drmselvam@yahoo.co.in

Mr. Kasilingam Lingaraja
Ph.D Research Scholar (Full Time)
Department of Commerce and Financial Studies,
Bharathidasan University
Tiruchirappalli, Tamil Nadu-620 024, India
E- Mail ID: klingarajaphd@gmail.com

and

Ms. Gayathri Mahalingam
Ph.D Research Scholar (Full Time)
Department of Commerce and Financial Studies
Bharathidasan University
Tiruchirappalli, Tamil Nadu-620 024, India
E- Mail ID: mgayu86@gmail.com

Abstract

Small and Medium Enterprises (SMEs) form the backbone of manufacturing sector and have become the growth engine of economic development in the world. It is to be noted that world over, half of two-thirds of all businesses are SMEs and in many regions, this proportion is still higher. SMEs are capable of creating jobs with least amount of capital and in dispersed locations, which make SMEs attractive to the policy makers. The main aim of this study is to analyze the stock market integration of Small and Medium Size Enterprises in India and USA by analyzing the sample indices. This paper examined the stock market integration using three sample Indian Indices (CNX SMALL CAP, CNX MID CAP and CNX Nifty) and three sample USA Indices (like Dow Jones U.S. SMALL CAP, Dow Jones U.S. MID CAP index and Dow Jones Industrial Average). An attempt has been made to examine the Normality, Interrelationships and Causality of returns between sample indices of India and USA.

Keywords: Stock ***Market Integration, CNX Nifty, Dow Jones Industrial Average and Smallcap, Midcap.***

Stock Market Integration of India and USA: A Study on Small and Medium Enterprises

1. INTRODUCTION

Small and Medium Enterprises (SMEs) have been playing an important role in the development of Indian and American economy. These small and medium-scale industries not only help to create employment opportunities but also generate income, investment and savings among people for the development of the economy of respective countries. Further, these industries also help in developing regional economy, promotion of export potential, promotion of market facilities, development of infra – structural facilities etc. Small and Medium-scale Industries also help in eradicating poverty and unemployment problems. SMEs provided employment opportunities to rural and urban masses, generated income and in the process, raised the levels of standard of living of people. Small Scale Industries all over the world have been engines of growth in the new millennium. It accepts 'competitiveness' as the 'mantra' for its future growth. In the struggle for existence, it is always the SURVIVAL OF THE FITTEST. The SME sector has the potential to take the economy to the desired destination of globalization, employment generation, equi-distribution of income, acquiring competitive edge and high rate of economic growth. It is to be noted that India's existing share in the world trade of not more than 0.7 per cent is a matter of grave concern as this is not adequate to make the country a major player in the economic affairs of the world (**Srinivasa Kumar V, 2012**)**.** The situation becomes all the more alarming when it is compared with the position of 1.5 percent in early 50s. Another disturbing feature is that Indian share has been stagnating at the level of 0.6 to 0.8 percent for more than two decades now **(http://shodhganga.inflibnet.ac.in/bitstream/10603/4959/12/12_chapter%203.pdf).**

i) The Classification of Micro, Small and Medium Enterprises (SME) in India

Micro, Small and Medium Enterprises in India is classified and illustrated in **Chart-1.** There are three sectors, namely, Micro, Small and Medium Enterprises, as described below.

a. Micro Enterprises

In India, a micro-enterprise is one where the investment in plant and machinery (their original cost excluding land, building and items, specified by the Ministry of Small Scale

Electronic copy available at: http://ssrn.com/abstract=2368110

Industries in its notification No. S.O. 1722(E), dated October 5, 2006), does not exceed Rs.25 lakhs.

b. Small Enterprises

In India, a small enterprise is one where the investment in plant and machinery (see above) is more than Rs.25 lakhs but does not exceed Rs.5 crores.

c. Medium Enterprises

In India, a medium enterprise is one where the investment in plant and machinery (see above) is more than Rs.5 crores but does not exceed Rs.10 crores.

ii) Stock Exchanges and SME in India

In India, the Prime Minister's Task Force (Jan. 2010) recommended a dedicated Stock Exchange/ Platform for SMEs. As a result, the SEBI in India has also laid down the regulation for the governance of SME Platform. The Bombay Stock Exchange Ltd (BSE) and the National Exchange of India (NSE) are keen on setting up separate platforms for small and medium enterprises. The necessary changes and amendments are being made in the rules, bye-laws and regulations of the cash market for making provision for SME Platform. For the purpose of this study, three sample indices of NSE of India and USA were taken.

iii) Stock Market Indices for SMEs

Indices have been developed for SMEs in India and USA. For the purpose of this study, three indices from India (i.e., Two SME indices namely CNX Midcap, CNX Smallcap and one from general index namely CNX Nifty) and three indices from USA (Two SME indices namely DJ Midcap, DJ Smallcap and one general index namely DJ Industrial Average) were selected and briefly discussed.

a) CNX MIDCAP INDEX

The mid cap segment of the stock market is being increasingly perceived as an attractive investment segment with high growth potential. The primary objective of the CNX Midcap Index is to capture the movement of the midcap segment of the market. The CNX Midcap Index comprises 100 tradable stocks listed on the National Stock Exchange (NSE). CNX Midcap Index is computed using free float market capitalization method, wherein the level of the index reflects

the total free float market value of all the stocks in the index relative to particular base market capitalization value. CNX Midcap can be used in India for a variety of purposes such as benchmarking fund portfolios, launching of index funds, ETF's and structured products.

b) CNX SMALLCAP INDEX

The CNX Smallcap Index is designed to reflect the behaviour and performance of the small cap segment of the financial market. The CNX Smallcap Index comprises of 100 tradable stocks listed at the National Stock Exchange (NSE). CNX Smallcap Index is computed using free float market capitalization method, wherein the level of the index reflects the total free float market value of all the stocks in the index relative to particular base market capitalization value. In India, CNX Smallcap can also be used for a variety of purposes such as benchmarking, fund portfolios, launching of index funds, ETFs and structured products.

c) CNX NIFTY

The CNX Nifty is a well diversified 50 stock index accounting for 22 sectors of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, index based derivatives and index funds. It is owned and managed by India Index Services and Products Ltd (IISL), which is a joint venture between NSE and CRISIL. IISL is India's first specialised company focused upon the index as a core product. It represents about 68.03% of the free float market capitalization of the stocks listed on NSE as on March 28, 2013.

d) DJ MIDCAP INDEX

The overall market capitalization of the industry is valued at US$ 1.2 billion to US$ 5.1 billion for the Midcap Index. The market cap of a potential addition to an index is looked at in the context of its short and medium term historical trends as well as those of its industry. These ranges are reviewed from time to time to ensure consistency with market conditions.

e) DJ SMALLCAP INDEX

The company market capitalization is valued at US$ 350 million to US$ 1.6 billion for the Smallcap Index. The market cap of a potential addition to an index is looked at in the context of its short and medium term historical trends as well as those of its industry. These ranges are reviewed from time to time to ensure consistency with market conditions.

f) DOW JONES INDUSTRIAL AVERAGE

The Dow Jones Industrial Average is a price-weighted average of 30 significant stocks traded on the New York Stock Exchange and the Nasdaq. The DJIA was introduced by Charles Dow back in 1896.

2. REVIEW OF LITERATURE

The previous studies that analyzed the SMEs indices are briefly reviewed below.

John R.Baldwin (1995) examined the different strategies and activities by analysing a sample of more successful and less successful group of growing small and medium sized enterprises. The study found that there were general strategies where scores were significantly higher for the more successful than for the less successful firms across a wide range of industries. **Dan diBartolomeo (1999)** reviewed the historical performance of US equities classified into small capitalization and mid-capitalization categories. The returns were reviewed using two widely published sets of market indices. The results were mixed. The simulation tests did not indicate overall difference in returns. **Thorsten Beck., et al (2003)** evaluated the relationship between the relative size of Small and Medium Enterprise (SME) Sector, economic growth and poverty using a sample of 76 countries. The study found that there was strong association between the importance of SMEs and GDP per capita growth. **Xu and McConell (2006)** found that the small cap stocks recorded higher return than the large cap stocks in a specified Turn of the Month (TOM) period. Their preliminary conclusion of this study was that the TOM effect was not confined to the small cap stocks only, but also found in large cap stocks. **Gowri Shankar and James M.Miller (2006)** reported the effects of changes in the Standard & Poor's (S&P) SmallCap 600 Index between 1995 and 2002 on stock prices, trading volumes and institutional ownership. The study found that new additions experienced positive returns while firms transferred to the S&P 600 from other S&P indexes recorded negative returns on the announcement day. **Khan Atiqur Rahman (2010)** elaborated the development of Small and Medium scale Enterprise in Bangladesh, its financial constraints, policy level constraints and entrepreneurship of SME in Bangladesh. The study suggested that the commercial banks in Bangladesh have to establish separate functional relations with the SME to provide the required guidelines, supervision and financial assistance. **Sudha Venkatesh and Krishnaveni Muthaiah**

(2012) explained the theoretical concept of Small and Medium Enterprises and their vital role in India. It is found that in India, SMEs had achieved steady growth over the last couple of years. **Confederation of Indian Industry (2012)** conducted a survey on the impact of FDI on SMEs, based on a large sample. The CII Survey confirmed that almost 96% of the respondents from SME Sector were aware of the Government's earlier decision to allow 100% FDI in single brand retail and 51% FDI in multi-brand retail and also of the latest notification during the study period. **Kannadas. P and Anand. V.A (2013)** studied the linkage between information systems in SMEs using causal path analysis. It was found that there was a direct influence of system quality, information's quality and service quality of Information System on the users' satisfactions.

The review of earlier studies clearly reveals the fact that there was no comprehensive study exclusively comparing the performance of small and medium capitalization indices of India and USA. In the light of this study, the retail investors could easily identify the riskless investment in SMEs indices in USA and India. It is also an attempt to fill the time gap of researches on American and Indian Markets in respect of SMEs indices.

3. STATEMENT OF THE PROBLEM

In many cases, the mid-caps are the companies emerging from small-cap companies that have managed to thrive, proving the value and sustainability of their business plans. Because mid-cap companies have been around longer than most small-caps, they normally have stronger, more established products and services, along with seasoned and experienced management teams, larger market shares, stronger name recognition, global exposure and existing revenues. In turn, mid-caps generally offer less business execution risk for the investors than small-caps. Every investor to some extent is aware of such trade-off between risk-return but they do not know stock market integration of SMEs indices in India and USA in respect of risk involved in each sample index. This study would help the investors to identify the riskless and moderate amount of investment strategies in SMEs. Against this background, the present study entitled **Stock Market Integration of India and USA: A Study of Small and Medium Enterprises,** has been attempted.

4. NEED OF THE STUDY

The present study is an addition to the existing body of knowledge of SMEs as very scanty research work is available. It is to be noted that scanty research work was undertaken in the area of financial research covering the stock market integration of SMEs Indices of USA and Indian Stock Market. Due to globalization, retail investors could have lucrative opportunities to invest in the diversified portfolios across the world through stock market. The portfolio may include SMEs indices also. The global investment decisions are based on several aspects but the knowledge of stock market fluctuation is a vital aspect for making smart decision to get maximum return with minimum risk. They do not have deep amount of knowledge about the level of risk and the kind of risks affecting the investment. This study is useful for FIIs to estimate the extent of integration among SMEs indices in these two countries. The present study is also useful to investors, portfolio managers, corporate executives, policy makers etc., to understand the stock market integration of Small cap and Mid cap firms in India and USA.

5. OBJECTIVES OF THE STUDY

The present study proposes to examine the stock market integration of SMEs in India and USA. Besides, this study tests the normal distribution of return data and aims to analyse the Correlation and Causality between Indian and USA SMEs Indices.

6. HYPOTHESES OF THE STUDY

For the purpose of this study, the following three null hypotheses were put to test.

NH1 There is no normal distribution of SMEs Indices of India and USA.

NH2 There is no significant degree of correlation between SMEs Indices of India and USA

NH3 There is no causality between SMEs Indices of India and USA.

7. METHODOLOGY OF THE STUDY

7.1 Period of the Study

The present study was based on secondary data and covered a period of eight years from 01/07/2005 to 30/06/2013.

7.2 Selection of Sample Indices

The present study selected one developing country and one developed country. Hence USA (Developed Country) and India (Developing Country) were selected for this study. From each country, three sample indices (i.e., Two from SMEs and One general index) were selected. Since the

study aims to analyze stock market integration of SMEs of developed and developing country, the SMALL CAP, MIDCAP and major index of both India and USA were taken as the sample. The details of the sample indices are given in Table-1.

7.3 Source of Data

The required secondary data like daily closing prices of sample indices were collected from Yahoo Finance and nseindia.com. Other required data were collected from reputed Journals, Books and Websites.

8. TOOLS USED FOR ANALYSIS

The following tools were used to examine the data.

- Descriptive Statistics (to find out the normal distribution of returns of selected samples)
- Pearson Correlation (to find correlation between the SMEs indices returns)
- Granger Causality (to find causality between the SMEs indices returns)
- Graphical Exposition.

The computations of data for this study were made by using E-Views (Version 6.0)

9. LIMITATIONS OF THE STUDY

The study suffers from the following limitations.

- This study considered only three sample indices from India and USA each.
- The study period was limited to only eight years i.e. from 1st July 2005 to 30th June 2013.
- All the limitations associated with tools used, are also applicable to this study.
- The concepts relating to the SMEs are not discussed in detail, since the focus was on analytical explanations. Though the segregation of Enterprises into Small and Medium is based on varied grounds, the base for segregation in India alone was briefly presented.

10. ANALYSIS OF SMES INDICES OF INDIA AND USA

10.1. Normal Distribution for SMEs Indices in India and USA

10.2. Correlation for SMEs Indices in India and USA

10.3. Causality for SMEs Indices in India and USA

The analysis of causality of SMEs Indices is further divided as follows

a) Causality for SMEs Indices Returns of USA

b) Causality for SMEs Indices Returns of India

c) Causality for SMEs Indices Returns of India and USA

10.4. Graphical Exposition for SMEs Indices in India and USA

10.1 Normal Distribution for SMEs Indices in India and USA

Table - 2 shows the results of Descriptive Statistics for SMEs Indices of USA and India during the study period from 01-07-2005 to 30-06-2013. It is to be noted that the summary statistics, namely, mean, minimum, maximum, median, standard deviation (SD), skewness, kurtosis and the Jarque- Bera were used to analyse the relationship among sample indices return during the study period.

It is clear from the above Table that the mean value of the Indian CNX MIDCAP Index (0.000440) was greater than that of CNX SMALLCAP Index (0.000304) during the study period. It is significant to note that CNX SMALL CAP performed poorly in India during the study period. It is to be noted that the sample indices of USA earned the mean value of 0.000254 (DJ SMALLCAP) and 0.000259 (DJ MIDCAP). This was greater than that of DJ Industrial Average Index (0.000184). This indicates the fact that the two indices, namely, DJ SMALL and MIDCAP were better and performed well in USA during the study period. The index of CNX SMALLCAP in India recorded the lowest average daily returns, with a value of 0.000304. At the same time, DJIA in USA performed poorly than other two indices, namely, DJSC and DJMC. The median value of the Indian Index, namely, CNX SMALLCAP, with a value of 0.001975, was greater than other sample indices of India. It indicates the fact that CNX SMALLCAP was stable with the midpoint of average return better than that of other two indices, namely, CNX NIFTY (0.001008) and CNX MIDCAP Index (0.001899). During the study period, the median values of the USA Indices reveal the fact that both DJ SMALLCAP (0.001072) and MIDCAP (0.001060) were better than that of DJ Industrial Average Index (0.012761) during the study period. The maximum values of sample indices return for India and USA (both SMALL and MIDCAP) were not better than the major or large indices of CNX Nifty and DJ Industrial Average during the study period.

The analysis of Standard Deviation identified the risk factor faced by SME firms in India and USA. It is to be noted that SMALLCAP assumed higher risk than MIDCAP during the

study period. This indicates that there was high risk (in respect of six sample indices) and this fact is useful to speculators but the retail investors need to carefully study the market risk. The analysis of skewness shows that its values were negative for all sample indices both in USA and India. The kurtosis values were larger than three, which indicate high level fat-tails, which makes it Leptokurtic. The kurtosis values of three Indian sample indices were 10.05696 (CNX SMALL CAP), 9.644991 (CNX MIDCAP), 11.19429 (CNX NIFTY) while the values of three USA sample indices were 8.315768 (DJ SMALLCAP), 9.65792 (DJ MIDCAP) and 12.75241 (DJIA) during the study period. The analysis of skewness and kurtosis of the indices indicates that there was non-symmetric distribution of data, with fat tails as compared to normal distribution. Besides, the Jarque-Bera (JB) values of the indices implied that none of the indices was normally distributed during the study period. It is to be noted that within the sample of all the six Indices, daily index returns exhibited non-normality. In the same way, the total returns of indices were also non- normally distributed.

The overall analysis of the above Table suggests that SMEs Indices of both India and USA assumed high risk, which indicates that sample indices were more volatile during the study period. The distribution of index return data for sample indices was not normal. Hence the Null Hypothesis (NH1) **- There is no normal distribution of SMEs indices of India and USA during the study period,** was accepted.

10.2 Correlation for SMEs Indices in India and USA

The correlation is the statistical tool generally used to measure the degree of relationship between different variables. When the value of one variable is associated with other or influenced by other variables, Karl Pearson's coefficient of correlation is normally used as a measure of linear relationship among them. In this study, three indices (such as CNX NIFTY, CNX MID CAP, CNX SMALLCAP) from India and three indices (such as DJ INDUSTRIAL AVERAGE, DJ MIDCAP, DJ SMALLCAP) from USA were analysed to study the significance of correlation.

The analysis of degree of relationship of SMEs indices of India with USA is presented in Table-3. It is clear from the above Table that among the selected sample indices of USA, positive and high degree of correlation was found between DJ MIDCAP and DJ SMALLCAP (0.965) at 1% significant level. One USA index, namely, DJ INDUSTRIAL AVERAGE was positively correlated (0.926) with DJ MIDCAP during the study period at 99% confident level. The index

of DJ SMALLCAP of USA also recorded positive degree of correlation with DJ INDUSTRIAL AVERAGE, with a value of 0.894 at the same 1% significant level. Thus all the three sample indices from USA recorded high degree of correlation with all the three indices. Hence the Null Hypothesis (NH2) - **There is no significant degree of correlation of SMEs indices of USA during the study period,** was rejected.

In India, the high degree of significance between a pair of indices, namely, CNX NIFTY with CNX MIDCAP, with a value of 0.866 at 99% confident level, followed by CNX NIFTY with CNX SMALLCAP with a value of 0.820 at 1% significant level. At the same time, indices like CNX MIDCAP with CNX SMALLCAP registered high and positive correlation with a value of 0.944 at 99% confidence level. It is to be noted that all the three Indian indices experienced high significant correlation with each other at 99% confident level. Hence the Null Hypothesis (NH2) - **There is no significant degree of correlation of SMEs index of India during the study period,** was rejected.

The overall analysis of correlation between the indices of India and USA shows that the two indices, namely, Dow Jones Midcap and Dow Jones Smallcap recorded high and positive correlation with each other, having a value of 0.965, followed by Indian SMEs indices (CNX MIDCAP and CNX SMALLCAP), with a value of 0.944 at 1% significant level. At the same time, the two SMEs indices from each country were not significantly correlated with major indices like Dow Jones Industrial Average and CNX Nifty. For example, CNX Nifty with DJ Small cap and Midcap earned values of 0.020 and (0.025) respectively. Hence the Null Hypothesis (NH2) - **There is no significant degree of correlation of SMEs index of USA and India during the study period,** was partially accepted.

It is interesting to note that retail investors, who had invested their hard earned money in these SME indices that were positively correlated during the study period, should have earned better or equal returns. The overall analysis of the above Table indicates that retail investors could invest their money in the sample SMEs indices in India and USA that were positively correlated with major or large indices. In other words, everyone may earn better returns on par with their counterparts abroad.

10.3 Causality for SMEs Indices

a. Causality for SMEs Indices Returns of USA

Table - 4 explains the results of Causality Test for SMEs indices returns in USA during the period from 01.07.2005 to 30.06.2013. An attempt has been made to apply Granger Causality Test to examine the inter relationship between the sample indices of USA at 5% significant level. It is clear that totally 2009 observations from each sample index were used for analysis. In order to apply Granger Causality Test, sample indices of USA, were grouped into six pairs of indices. They are DJ Micap and DJ Industrial Average, DJ Industrial Average and DJ Midcap, DJ Smallcap and DJ Industrial Average, DJ Industrial Average and DJ Smallcap, DJ Smallcap and DJ Midcap, DJ Midcap and DJ Smallcap. According to the analysis of F-Statistics, three pair of indices (DJ INDUSTRIAL AVERAGE and DJ MIDCAP (3.95269), DJ SMALLCAP and DJ INDUSTRIAL AVERAGE (5.22339), DJ MIDCAP and DJ SMALLCAP (4.04609)) earned significant F- values during the study period. It is noted that out of six pairs of indices, only three pair of indices were significant at 5% level. Hence the Null Hypothesis (NH3) - **There is no causality between SMEs index of USA during the study period,** was rejected in respect of the three pairs of indices. As per the analysis of probability, the same three pairs of indices, namely, DJ INDUSTRIAL AVERAGE and DJ_MIDCAP (0.0194), DJ SMALLCAP and DJ INDUSTRIAL AVERAGE (0.0055), DJ MIDCAP and DJ SMALLCAP (0.0176) recorded correlation. The P-Value further confirmed the fact that index returns were influenced by SMEs Indices. At the same time, the remaining three pairs of indices were accepted at 5% significant level.

b. Causality for SMEs Indices Returns of India

The results of Causality Test for Indian SMEs indices returns during the period from 01.07.2005 to 30.06.2013 are shown in **Table - 5**. An attempt has been made to apply Granger Causality Test to examine the inter relationship between three sample indices of India at 5% significant level. It is clear that totally 1986 observations from each sample index were used for the analysis. In order to apply Granger Causality Test, three Indian sample indices were grouped into six pairs of indices. According to the analysis of F-Statistics, five pair of Indices, namely, CNX NIFTY and CNX MIDCAP (4.13894), CNX SMALLCAP and CNX MIDCAP (3.59965), CNX MIDCAP and CNX SMALLCAP (7.1315), CNX SMALLCAP and CNX NIFTY (4.31232), CNX NIFTY and CNX SMALLCAP (4.20728), earned significant F- values. In other

words, India SMEs exercised impact on the indices returns during the study period. It is noted that only five pair of Indices out of six were significant at 5% level. Hence the Null Hypothesis (NH3) - **There is no causality between SMEs indices of India during the study period,** was rejected in respect of the five pairs of indices. As per the analysis of probability, three pairs of indices, namely, CNX NIFTY and CNX MIDCAP (0.0161), CNX SMALLCAP and CNX MIDCAP (0.0275), CNX MIDCAP and CNX SMALLCAP (0.0008), CNX SMALLCAP and CNX NIFTY (0.0135), CNX NIFTY and CNX SMALLCAP (0.015), exhibited correlation during the study period. The Probability Analysis further confirmed the fact that index returns were influenced by SMEs indices during the study period. At the same time, the remaining one pair of index, namely, CNX MIDCAP and CNX NIFTY was accepted at 5% significant level.

c. Causality for SMEs Indices Returns of India and USA

Table - 6 explains the results of Causality Test for the returns of SMEs indices of USA and India during the period from 01.07.2005 to 30.06.2013. An attempt was made to apply Granger Causality Test to examine the inter relationship between the sample indices at USA and India at 5% significant level. In order to apply Granger Causality Test, six sample indices were classified into 30 pairs of indices. According to the analysis of P- Value, 18 pairs and their values were recorded - CNX NIFTY and CNX SMALLCAP (0.015), CNX SMALLCAP and CNX NIFTY (0.0135), CNX MIDCAP and CNX SMALLCAP (0.0008), CNX SMALLCAP and CNX MIDCAP (0.0275), CNX SMALLCAP and DJ SMALLCAP (0.00002), CNX SMALLCAP and DJ MIDCAP (0.000009), CNX SMALLCAP and DJ INDUSTRIAL AVERAGE (0.000003), CNX NIFTY and CNX MIDCAP (0.0161), CNX NIFTY and DJ SMALLCAP (0.00002), CNX NIFTY and DJ MIDCAP (0.00004), CNX NIFTY and DJ INDUSTRIAL AVERAGE (0.00004), CNX MIDCAP and DJ SMALLCAP (0.00002), CNX MIDCAP and DJ MIDCAP (0.00002), CNX MIDCAP and DJ INDUSTRIAL AVERAGE (0.000005), DJ MIDCAP and DJ SMALLCAP (0.0176), DJ SMALLCAP and DJ INDUSTRIAL AVERAGE (0.0055), DJ INDUSTRIAL AVERAGE and DJ MIDCAP (0.0194), DJ MIDCAP and DJ INDUSTRIAL AVERAGE (0.0708). It is significant that all the 18 pair of indices earned significant P- values. Hence the SME index returns of India and SME indices returns of USA granger causes each other. It is noted that the 18 pairs of Indices were significant both at 5% and 10% levels. Hence the Null Hypothesis (NH3) - **There is no causality between SMEs indices of India and USA during the study period,** was rejected in respect of the 18 pairs of indices. As per the analysis of

F –Statistics, the same 18 pairs of indices earned positive values. They were CNX NIFTY and CNX SMALLCAP (4.20728), CNX SMALLCAP and CNX NIFTY (4.31232), CNX MIDCAP and CNX SMALLCAP (7.1315), CNX SMALLCAP and CNX MIDCAP (3.59965), CNX SMALLCAP and DJ SMALLCAP (11.0091), CNX SMALLCAP and DJ MIDCAP (11.736), CNX SMALLCAP and DJ INDUSTRIAL AVERAGE (12.6946), CNX NIFTY and CNX MIDCAP (4.13894), CNX NIFTY and DJ SMALLCAP (10.6887), CNX NIFTY and DJ MIDCAP (10.241), CNX NIFTY and DJ INDUSTRIAL AVERAGE (10.1595), CNX MIDCAP and DJ SMALLCAP (10.947), CNX MIDCAP and DJ MIDCAP (11.0189), CNX MIDCAP and DJ INDUSTRIAL AVERAGE (12.3862), DJ MIDCAP and DJ SMALLCAP (4.04609), DJ SMALLCAP and DJ INDUSTRIAL AVERAGE (5.22339), DJ INDUSTRIAL AVERAGE and DJ MIDCAP (3.95269), DJ MIDCAP and DJ INDUSTRIAL AVERAGE (2.65182).

10.4. Graphical Exposition for SMEs Indices in India and USA

A picture tells a thousand words. Our Interactive Graphs have proved this phrase by providing the user a unique and over-whelming experience. This graphical representation is useful to all retail investors who could easily identify their best investment and riskless markets. The financial risk premium movements in countries like USA and Indian are captured in **Figures 1 to 8**.

Figure-1 shows the movements of Dow Jones Industrial Average Index and Dow Jones Midcap Index of daily closing points. It is to be noted that during the study period from 1st July 2005 to 30th June 2013, the DJIA Index was highly volatile when compared to DJ Midcap Index. Besides, it is clearly understood that there was no interrelationship between the DJIA and DJ Midcap Index during the study period.

The movements of Dow Jones Industrial Average Index and Dow Jones Smallcap Index of daily closing points are depicted in **Figure-2**. It is clear that during the study period from 1st July 2005 to 30th June 2013, the DJIA Index was highly volatile when compared with DJ Smallcap index. It is clearly inferred that there was no interrelationship between the DJIA and DJ Smallcap indices.

Figure-3 reveals the movement of Dow Jones Midcap and Dow Jones Smallcap Index of daily closing points during the study period from 1st July 2005 to 30th June 2013. The performance of DJ Mid cap and DJ Smallcap indices was equal. It is clearly evident from the above Figure that both the SMEs Indices of New York Stock Exchange experienced interrelationship during the study period. Therefore, the performance of both indices assumed same level of risk and return to the retail investors.

Figure-4 presents the Movement chart covering CNX Nifty and CNX Midcap Indices of daily closing prices during the study period from 1st July 2005 to 30th June 2013. The CNX Nifty and CNX Midcap indices were equal. Besides, the performance of CNX Midcap was better than DJ Midcap.

The progress of daily closing prices of CNX Nifty Index and CNX Smallcap Indices is demonstrated in **Figure-5**. It is to be noted that during the study period from 1st July 2005 to 30th June 2013, CNX Nifty Index and CNX Smallcap movements were dependent on each other. It is clearly observed that there was interrelationship between the indices of CNX Nifty and CNX Smallcap.

Figure-6 explains the relationship between the CNX Midcap and CNX Smallcap Indices of daily closing points during the study period from 1st July 2005 to 30th June 2013. The performance of CNX Mid cap and CNX Smallcap Indices was equal. It is clearly evident from the above Figure that both Smallcap and Midcap Indices of National Stock Exchange performed equally. Therefore, both indices presented the same level of risk and return to the retail investors during the study period.

The relationship between the DJ Smallcap and CNX Smallcap Indices of daily closing points during the study period from 1st July 2005 to 30th June 2013, is displayed in **Figure-7**. The growth level of DJ Smallcap Index was not volatile when compared with the CNX Smallcap Index. It is clearly evident from the above Figure that both DJ Smallcap and CNX Smallcap Indices did not perform equally. In other words, there was no relationship between DJ Small and CNX Small Cap Indices.

Figure-8 shows the relationship between the DJ Midcap and CNX Midcap Indices of daily closing points during the study period from 1st July 2005 to 30th June 2013. The growth level of DJ Midcap Index was not volatile when compared with the CNX Midcap Index. It is clearly evident from the above Figure that both DJ Midcap and CNX Midcap Indices did not perform equally. In other words, there was no relationship between CNX Mid and CNX Small Cap Indices.

11. CONCLUSION

This study covered the stock market integration of sample SMEs Indices of India and USA. The results of Granger Causality indicate unidirectional "granger causality" running from the US stock markets (DJ Small Cap Index, DJ Midcap Index and DJIA) to Indian stock market (CNX Midcap, CNX Small Cap and NSE Nifty index). The previous day's daytime returns of both Indian and American stock markets recorded significant impact on the SMEs indices daily returns of the following day. However, the Summary Statistics clearly reveals that small and midcap performance was better than the DJ Industrial Average at USA. At the same time, both SMEs of India earned equal return on par with CNX Nifty. It is to be noted that small and mid cap stocks had produced superior returns over long periods of time during the study period.

REFERENCES

Confederation of Indian Industry (2012). The Impact of FDI in Retail on SME Sector. *A survey report, 1-10.*

Dan diBartolomeo (1999). An Empirical Investigation of the Performance of Small Capitalization and Mid-Capitalization Equity Strategies" *Electronic copy available at www.northinfo.com/documents/66.pdf*.

Gowri Shankar and James M.Miller. (2006). Market Reaction to Changes in the S&P SmallCap 600 Index. *The Financial Review, 41 (3):* 1-35.

John R.Baldwin. (1995). Innovation: The Key to Success in Small Firms. *Canadian Institute for Advanced Research,* 1-25.

Khan Atiqur Rahman. (2010). Development of small and medium scale enterprise in Bangladesh: prospects and constraints. *Electronic copy available at: http://ssrn.com/abstract=1583707.*

Kannadas.P and V.A.Anand. (2013). Linkage between Information Systems in SMEs and the performance of Firms: A Causal Path Ananlysis. *SMART Journal of Business Management Studies, 9 (2):* 43-50.

Raj K.D.,(2008). Small and Medium Enterprises (SMEs): Past, Present and Future in India. *Electronic copy available at* papers.ssrn.com/sol3/papers.cfm?abstract_id=1080505.

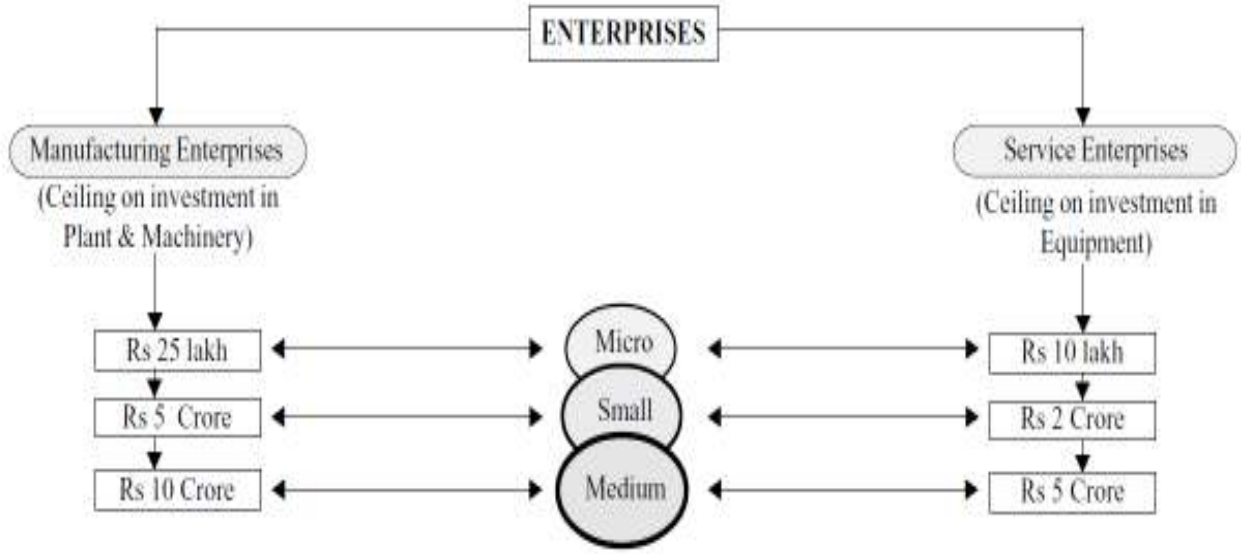
Sudha Venkatesh and Krishnaveni Muthaiah. (2012). SMEs in India: Importance and Contribution. *Asian Journal of Management Research, 2(2):*792-796.

Srinivasa Kumar V. (2010). A study on the working of small and medium enterprises: with special reference to Chennai and Tiruvallur Districts. A doctoral dissertation.

Thorsten Beck, Asli Demirguc-Kunt and Ross Levine. (2003). Small and Medium Enterprises, Growth and Poverty: Cross-Country Evidence. *World Bank Policy Research Working Paper 3178:* 1-46.

Xu, Wei., McConell, John J. (2006). Equity Returns at the Turn of the Month: Trading Strategies and Implications for Investors and Managers. *Krannert School of Management, Purdue University.*

Chart-1
Classification of Micro, Small and Medium Enterprises (SME)



Source: Schedule to the Industries (Development and Regulation) Act, 1951

Table - 1
The details of Stock Exchange and Sample Indices

COUNTRY NAME	INDEX NAME	STOCK EXCHANGE NAME	PERIOD OF THE STUDY	No of Observation
USA –General Index	Dow Jones Industrial Average	New York Stock Exchange	From 01st July 2005 to 30th June 2013	2011
USA- SME Index	Dow Jones Small Cap Index	New York Stock Exchange	From 01st July 2005 to 30th June 2013	2011
USA- SME Index	Dow Jones Mid Cap Index	New York Stock Exchange	From 01st July 2005 to 30th June 2013	2011
INDIA- General Index	CNX NIFTY	National Stock Exchange	From 01st July 2005 to 30th June 2013	1988
INDIA- SME Index	CNX Small Cap Index	National Stock Exchange	From 01st July 2005 to 30th June 2013	1988
INDIA-SME Index	CNX Mid Cap Index	National Stock Exchange	From 01st July 2005 to 30th June 2013	1988

Source: www.finance.yahoo.com and www.nseindia.com

Table - 2

The Results of Descriptive Statistics for SMEs Indices in India and USA during the study period from 01-07-2005 to 30-06-2013

Country and Index Name / Descriptive Statistics	INDIAN INDICES			USA INDICES		
	CNX SMALLCAP (SME)	CNX MIDCAP (SME)	CNX NIFTY (General)	DJ SMALLCAP (SME)	DJ MIDCAP (SME)	DJ INDUSTRIAL AVERAGE (General)
Mean	0.000304	**0.00044**	**0.000487**	0.000254	0.000259	0.000184
Median	0.001975	0.001899	0.001008	0.001072	0.00106	0.000551
Maximum	0.088872	0.114575	0.163343	0.087407	0.099624	0.105083
Minimum	-0.128821	-0.126508	-0.130142	-0.118748	-0.115265	-0.082005
Std. Dev.	**0.016081**	0.015826	**0.016798**	**0.016941**	0.015852	0.012761
Skewness	-1.040821	-0.696954	-0.002926	-0.42207	-0.455758	-0.072397
Kurtosis	10.05696	9.644991	11.19429	8.315768	9.65792	12.75241
Jarque-Bera	4484.088	3818.524	5561.967	2427.442	3783.928	7971.135
Probability	0	0	0	0	0	0
Observations	1988	1988	1988	2011	2011	2011

Source: http://finance.yahoo.com and Computed from E-Views

Table – 3

The Results of Correlation for SMEs Indices in India and USA during the study period from 01-07-2005 to 30-06-2013

Country		**United States of America**			**India**		
Country	Indices	DJ SMALLCAP (SME)	DJ MIDCAP (SME)	DJ INDUSTRIAL AVERAGE (General)	CNX SMALLCAP (SME)	CNX MIDCAP (SME)	CNX NIFTY (General)
United States of America	DJ SMALLCAP (SME)	1	**.965****	**.894****	**.051***	**.037***	0.020
	DJ MIDCAP (SME)		1	**.926****	**.053****	**.038***	0.025
	DJ INDUSTRIAL AVERAGE (General)			1	**.050***	**.041***	0.033
India	CNX SMALLCAP (SME)				1	**.944****	**.820****
	CNX MIDCAP (SME)					1	**.866****
	CNX NIFTY (General)						1
**. Correlation is significant at the 0.01 level (1-tailed).							
*. Correlation is significant at the 0.05 level (1-tailed).							

Source: http://finance.yahoo.com and Computed from SPSS version (20)

Table – 4

The Results of Causality for SMEs Indices in USA during the study period from 01-07-2005 to 30-06-2013

Pairwise Granger Causality Tests for Mid and Smallcap Index return of USA with DJIA				
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**	**Rejected or Accepted**
DJ_MIDCAP does not Granger Cause DJ_INDUSTRIAL_AVERAGE	2009	2.65182	0.0708	Accepted
DJ_INDUSTRIAL_AVERAGE does not Granger Cause DJ_MIDCAP		3.95269	0.0194*	**Rejected**
DJ_SMALLCAP does not Granger Cause DJ_INDUSTRIAL_AVERAGE	2009	5.22339	0.0055*	**Rejected**
DJ_INDUSTRIAL_AVERAGE does not Granger Cause DJ_SMALLCAP		2.03624	0.1308	Accepted
DJ_SMALLCAP does not Granger Cause DJ_MIDCAP	2009	1.14305	0.3191	Accepted
DJ_MIDCAP does not Granger Cause DJ_SMALLCAP		4.04609	0.0176*	**Rejected**

Sources: http://nseindia.com, http://yahoofinance.com and computed using E- views

* Indicates significant causal relationship at 5% significance level

Rejection of Null Hypothesis when the Probability value is less than or equal to 0.05

Table – 5

The Results of Causality for SMEs Indices in India during the study period from 01-07-2005 to 30-06-2013

Pairwise Granger Causality Tests for Mid and Smallcap Index return of India with CNX Nifty				
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**	**Rejected or Accepted**
CNX_NIFTY does not Granger Cause CNX_MIDCAP	1986	4.13894	0.0161*	**Rejected**
CNX_MIDCAP does not Granger Cause CNX_NIFTY		2.63262	0.0721	Accepted
CNX_SMALLCAP does not Granger Cause CNX_MIDCAP	1986	3.59965	0.0275*	**Rejected**
CNX_MIDCAP does not Granger Cause CNX_SMALLCAP		7.1315	0.0008*	**Rejected**
CNX_SMALLCAP does not Granger Cause CNX_NIFTY	1986	4.31232	0.0135*	**Rejected**
CNX_NIFTY does not Granger Cause CNX_SMALLCAP		4.20728	0.015*	**Rejected**

Sources: http://nseindia.com, http://yahoofinance.com and computed using E- views

* Indicates significant causal relationship at 5% significance level

Rejection of Null Hypothesis when the Probability value is less than or equal to 0.05

Table – 6

The Results of Causality for SMEs Indices in India and USA during the study period from 01-07-2005 to 30-06-2013

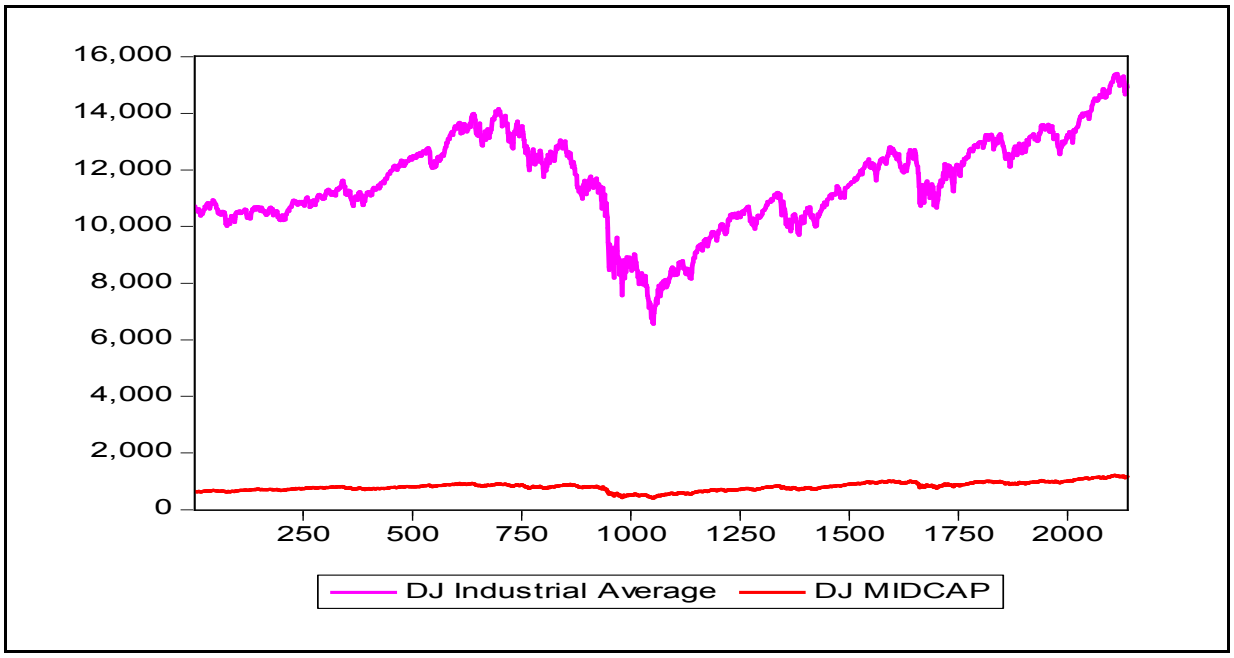
Pairwise Granger Causality Tests for Mid and Smallcap Index both US and India				
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**	**Rejected or Accepted**
CNX_NIFTY does not Granger Cause CNX_SMALLCAP	1986	4.20728	0.015*	**Rejected**
CNX_SMALLCAP does not Granger Cause CNX_NIFTY		4.31232	0.0135*	**Rejected**
CNX_MIDCAP does not Granger Cause CNX_SMALLCAP	1986	7.1315	0.0008*	**Rejected**
CNX_SMALLCAP does not Granger Cause CNX_MIDCAP		3.59965	0.0275*	**Rejected**
DJ_SMALLCAP does not Granger Cause CNX_SMALLCAP	1986	1.6111	0.199	Accepted
CNX_SMALLCAP does not Granger Cause DJ_SMALLCAP		11.0091	0.00002*	**Rejected**
DJ_MIDCAP does not Granger Cause CNX_SMALLCAP	1986	2.0649	0.1271	Accepted
CNX_SMALLCAP does not Granger Cause DJ_MIDCAP		11.736	0.000009*	**Rejected**
DJ_INDUSTRIAL_AVERAGE does not Granger Cause CNX_SMALLCAP	1986	1.41151	0.244	Accepted
CNX_SMALLCAP does not Granger Cause DJ_INDUSTRIAL_AVERAGE		12.6946	0.000003*	**Rejected**
CNX_MIDCAP does not Granger Cause CNX_NIFTY	1986	2.63262	0.0721	Accepted
CNX_NIFTY does not Granger Cause CNX_MIDCAP		4.13894	0.0161*	**Rejected**
DJ_SMALLCAP does not Granger Cause CNX_NIFTY	1986	2.38571	0.0923	Accepted
CNX_NIFTY does not Granger Cause DJ_SMALLCAP		10.6887	0.00002*	**Rejected**
DJ_MIDCAP does not Granger Cause CNX_NIFTY	1986	2.07611	0.1257	Accepted
CNX_NIFTY does not Granger Cause DJ_MIDCAP		10.241	0.00004*	**Rejected**
DJ_INDUSTRIAL_AVERAGE does not Granger Cause CNX_NIFTY	1986	1.4811	0.2276	Accepted
CNX_NIFTY does not Granger Cause DJ_INDUSTRIAL_AVERAGE		10.1595	0.00004*	**Rejected**
DJ_SMALLCAP does not Granger Cause CNX_MIDCAP	1986	1.49581	0.2243	Accepted
CNX_MIDCAP does not Granger Cause DJ_SMALLCAP		10.947	0.00002*	**Rejected**
DJ_MIDCAP does not Granger Cause CNX_MIDCAP	1986	2.00972	0.1343	Accepted
CNX_MIDCAP does not Granger Cause DJ_MIDCAP		11.0189	0.00002*	**Rejected**
DJ_INDUSTRIAL_AVERAGE does not Granger Cause CNX_MIDCAP	1986	1.5703	0.2082	Accepted
CNX_MIDCAP does not Granger Cause DJ_INDUSTRIAL_AVERAGE		12.3862	0.000005*	**Rejected**
DJ_MIDCAP does not Granger Cause DJ_SMALLCAP	2009	4.04609	0.0176*	**Rejected**
DJ_SMALLCAP does not Granger Cause DJ_MIDCAP		1.14305	0.3191	Accepted
DJ_INDUSTRIAL_AVERAGE does not Granger Cause DJ_SMALLCAP	2009	2.03624	0.1308	Accepted
DJ_SMALLCAP does not Granger Cause DJ_INDUSTRIAL_AVERAGE		5.22339	0.0055*	**Rejected**
DJ_INDUSTRIAL_AVERAGE does not Granger Cause DJ_MIDCAP	2009	3.95269	0.0194*	**Rejected**
DJ_MIDCAP does not Granger Cause DJ_INDUSTRIAL_AVERAGE		2.65182	0.0708*	**Rejected**

Sources: Computed data from http://nseindia.com/ and http://yahoofinance.com/ using E- views

* Indicates significant causal relationship at 5% significance level

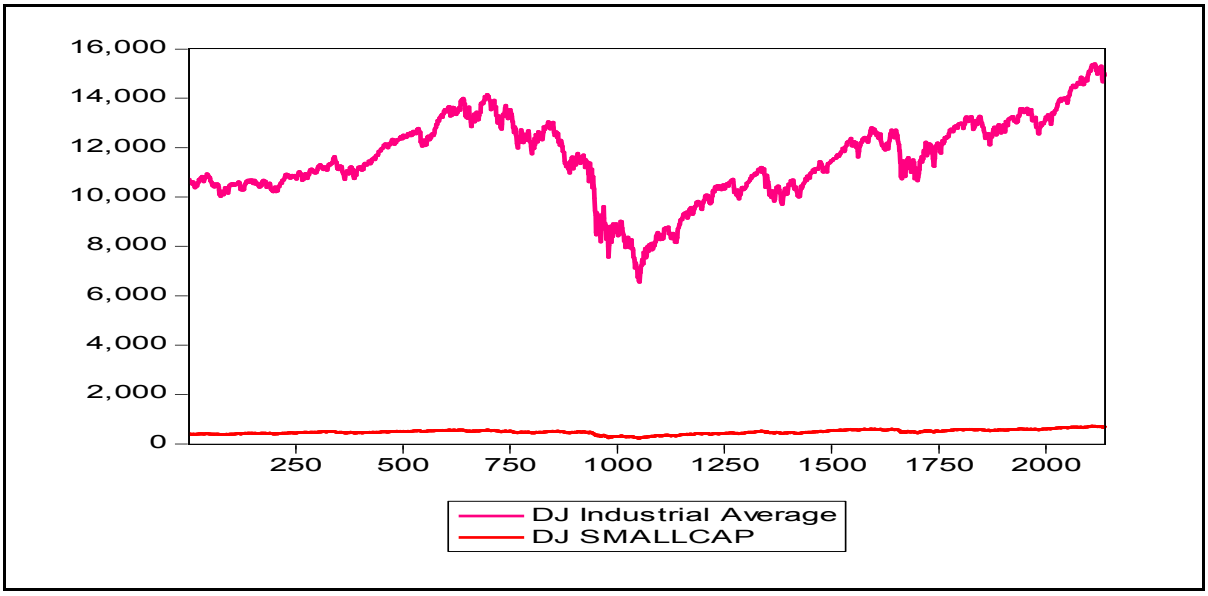
Rejection of Null Hypothesis when the Probability value is less than or equal to 0.05

Figure 1
Movement of Dow Jones Industrial Average (DJIA) with Dow Jones MIDCAP Index from 1st July 2005 to 30th June 2013



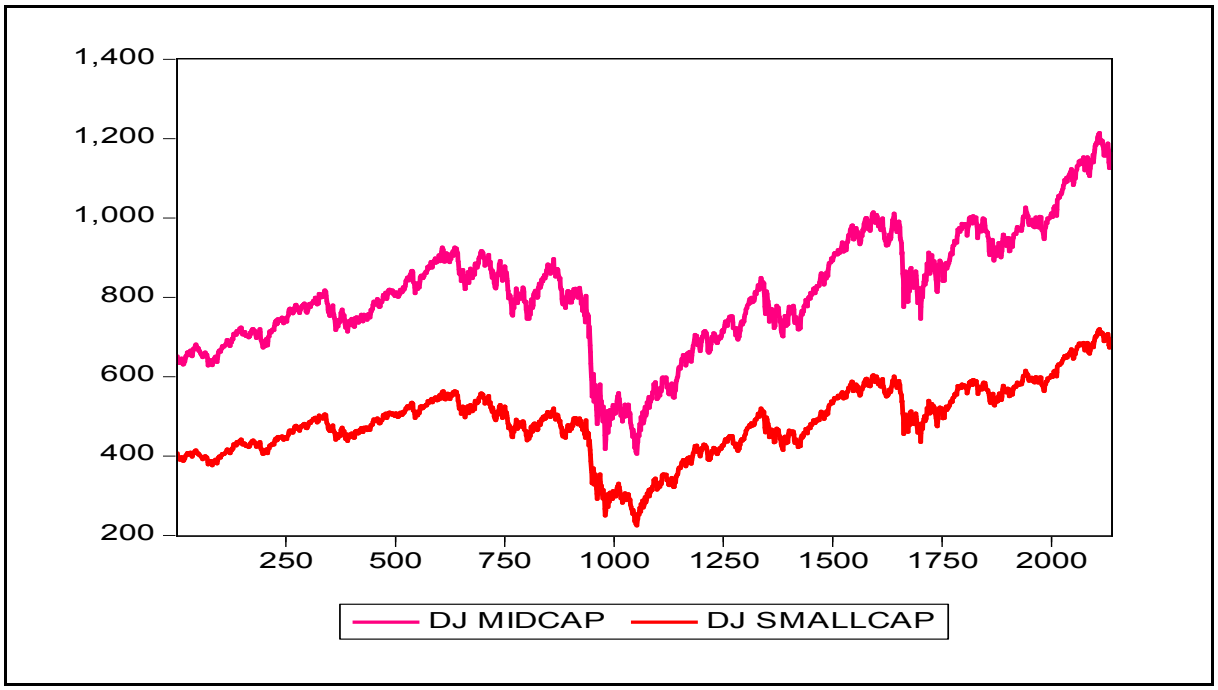
Source: http://finance.yahoo.com and Computed from E-Views

Figure 2
Movement of Dow Jones Industrial Average (DJIA) with Dow Jones SMALLCAP Index from 1st July 2005 to 30th June 2013



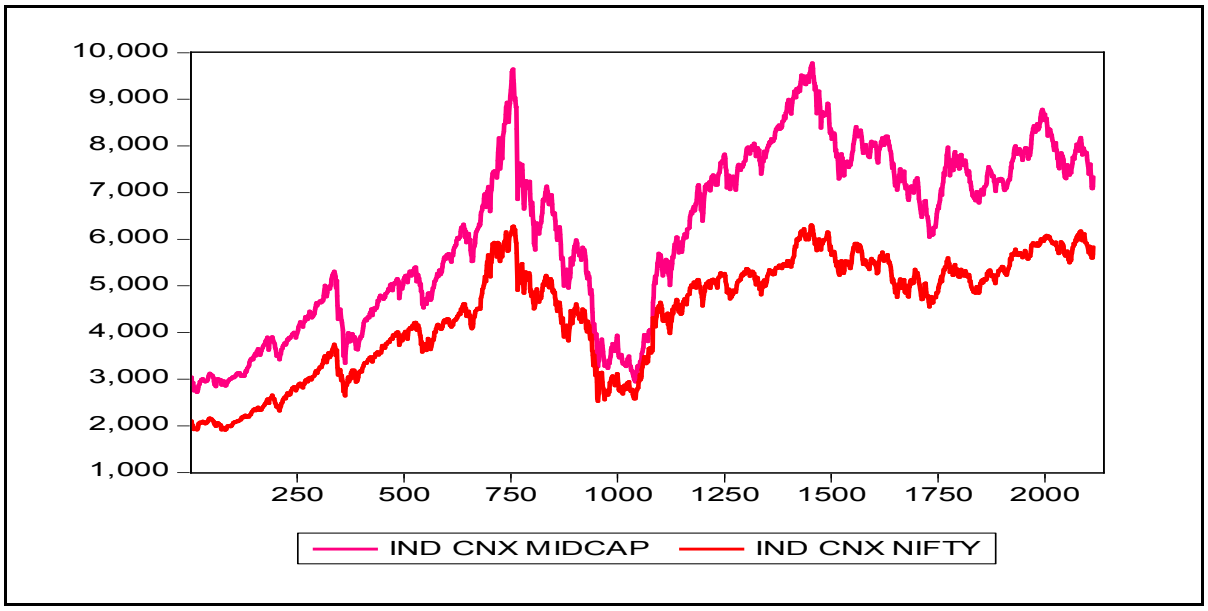
Source: http://finance.yahoo.com and Computed from E-Views

Figure 3
Movement of Dow Jones MIDCAP with Dow Jones SMALLCAP Index from 1st July 2005 to 30th June 2013



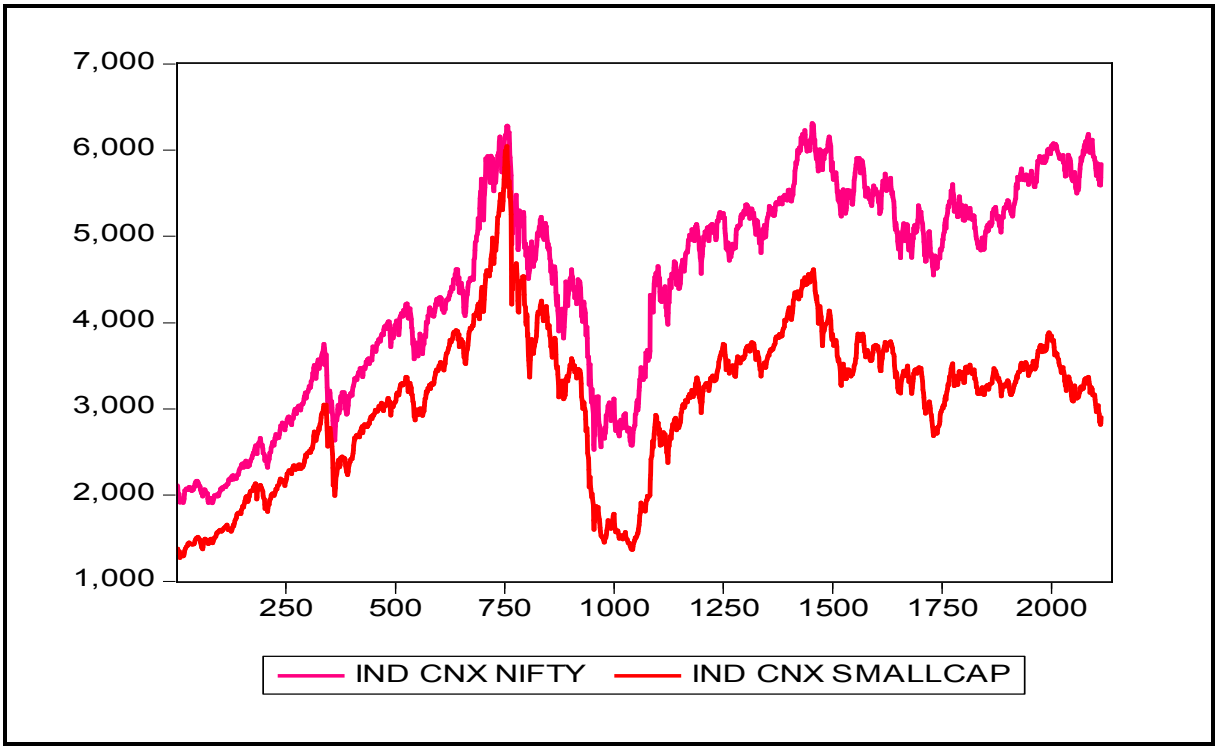
Source: http://finance.yahoo.com and Computed from E-Views

Figure 4
Movement of CNX NIFTY with CNX MIDCAP Index from 1st July 2005 to 30th June 2013



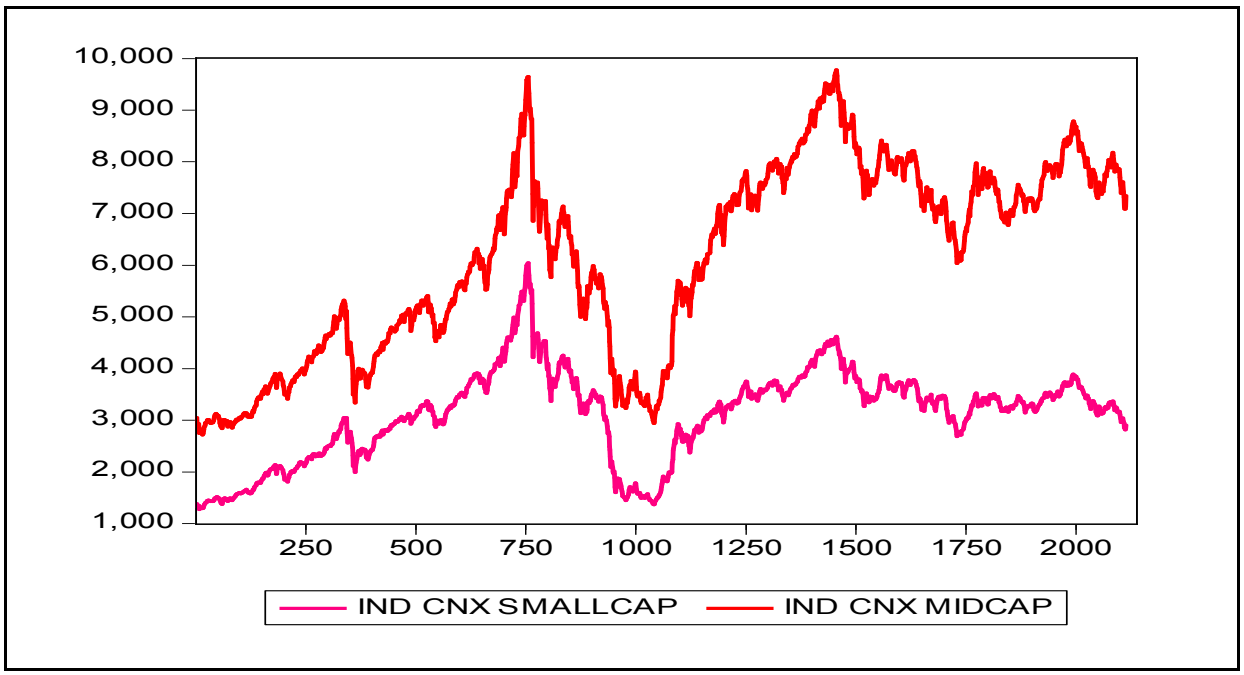
Source: http://finance.yahoo.com and Computed from E-Views

Figure 5
Movement of CNX NIFTY with CNX SMALLCAP Index
from 01-07-2005 to 30-06-2013



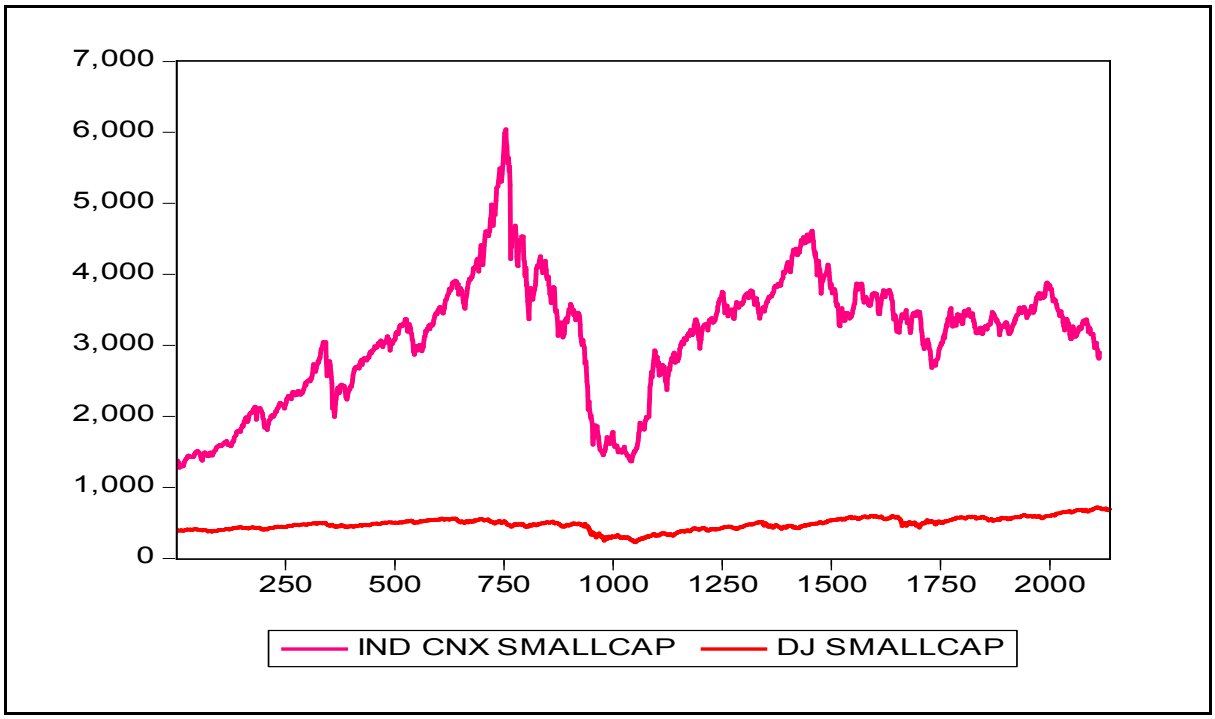
Source: http://finance.yahoo.com and Computed from E-Views

Figure 6
Movement of CNX MIDCAP with CNX SMALLCAP Index
from 01-07-2005 to 30-06-2013



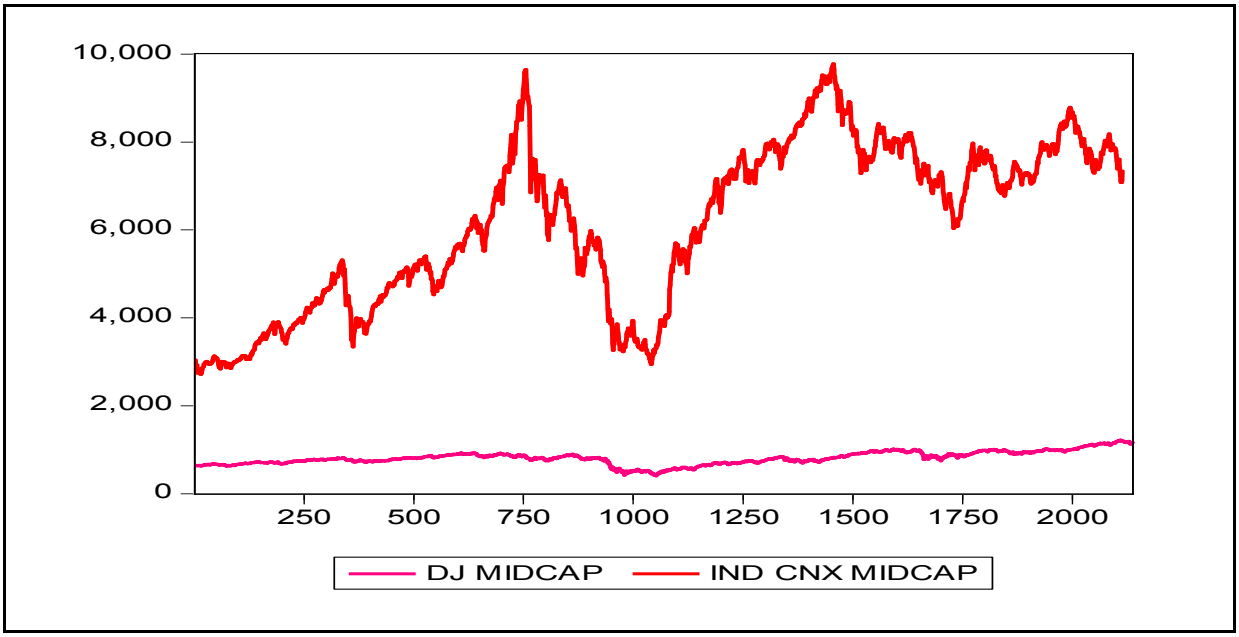
Source: http://finance.yahoo.com and Computed from E-Views

Figure 7
Movement of DJ SMALLCAP with CNX SMALLCAP Index
from 01-07-2005 to 30-06-2013



Source: http://finance.yahoo.com and Computed from E-Views

Figure 8
Movement of DJ MIDCAP with CNX MIDCAP Index
from 01-07-2005 to 30-06-2013



Source: http://finance.yahoo.com and Computed from E-Views