A

Dissertation

on

INVESTORS' SENTIMENT AND STOCK PORTFOLIO RETURNS IN THE CONTEXT OF MACROECONOMIC NEWS ANNOUNCEMENT: A COMPARISON BETWEEN SRI AND CONVENTIONAL STOCK PORTFOLIOS

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CERTIFICATE

This is to certify that the dissertation titled **"investors' sentiment and stock portfolio returns in the context of macroeconomic news announcement: a comparison between SRI and conventional stock portfolios"** carried by A**nil Kumar Bhuyan** has been accomplished under my supervision and guidance as registered M.Phil. in commerce student of the Mittal School of Business, Lovely Professional University, Punjab. this dissertation is being submitted by him in the partial fulfilment of the requirement for the award of M.Phil. in Commerce from lovely professional university

His dissertation represents his original work and is worthy of consideration for the award of the degree of M.Phil. (Commerce).

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ABSTRACT

The purpose of the paper is to examine the difference in the stock portfolio performance of socially responsible investment stocks vis-à-vis conventional stocks in the context of macro-economic news announcements. To test the differences in the selected stock portfolio returns, the study applied absolute rate of returns as well as risk weighted adjusted measures such as Sharpe ratio, Treynor ratio, Jensen's α, Information ratio, Fama's decomposition measure and dummy regression model. The study considers GREENEX and CARBONEX indices as proxy portfolios for socially responsible investment stocks while BSE Large Cap Index and BSE SENSEX were used as proxy for conventional stocks. Further, the performance of selected stocks was tested in the context of macro-economic news announcements like scheduled and un-scheduled news January 2013 to December 2016 were also considered. To test the hypothesis, panel regression model is applied. Past studies have found the significant and insignificant differences in the performances of socially responsible investment stocks vis-à-vis conventional stocks in various contexts such as pre, post and during the financial crisis in both the developed and developing countries. Although the present study is an extension of the previous studies, evaluating the performance of SRI and conventional stocks in the context of macro-economic news announcements assist the investors at the time of investments. In this study, a composite investor sentiment index was formed to know how the investor sentiment will affect the both SRI and non-SRI stock portfolio and know the macro economic news announcement on stock return as well as sentiment index. The results of the study show that SRI stock portfolio will perform better as comparison to other stock portfolio and also find that the news announcement will affect the sentiment of the investor

The study contributes to the related literature by analysing the performance of socially responsible stocks portfolios in Indian stock market which is one of the emerging markets.

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Anil Kumar Bhuyan

Date:

DECLARATION

I' **Anil Kumar Bhuyan** hereby declare that this dissertation titled **"investors' sentiment and stock portfolio returns in the context of macroeconomic news announcement: a comparison between SRI and conventional stock portfolios"** submitted to Mittal School of Business, Lovely Professional University, Punjab in partial fulfilment for the award of Master of philosophy in commerce is an original piece of work done by me and this has not been published or submitted elsewhere for the requirement of any degree programme . any literature, data or work done by others and cited within this dissertation has been given acknowledgement and listed in the reference section.

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Abbreviation used

CSR- Corporate Socially Responsible

SRI- Socially Responsible Investment

ESG- Environmental Social Governance

SC- Scheduled News

USC- Unscheduled News

PRI- Principle of Responsible Investment

IPO- Initially Public Offer

CEF-Close Ended Fund

MF- Mutual Fund

MPT- modern portfolio theory

CAPM-Capital Asset Pricing Model

CHAPTER-1

INVESTORS' SENTIMENT AND STOCK PORTFOLIO RETURNS IN THE CONTEXT OF MACROECONOMIC NEWS ANNOUNCEMENT: A COMPARISON BETWEEN SRI AND CONVENTIONAL STOCK PORTFOLIOS

``A drop in the value of the firm will cause a negative return on its stock, and will usually increase the leverage of the stock. That rise in the debt-equity ratio will surely mean a rise in the volatility of the stock''.

by Fischer Black

1: INTRODUCTION

Socially responsible investing or green investing has become a dynamic and rapidly growing segment of the united states financial services industry involving more than two trillion in professionally managed assets from the last two decades. Over last two to three decades the awareness of ESG factors like- environmental social and governance factors are increased because these factors are gauging the sustainability of the company. Environmental parameters imply that what are the measures taken by the company to reduce climate change and the toxic releases and wastes. Social factors imply that what are the behavior of the company towards their stakeholders, safety norms of the company towards their employee and healthy workplace. And the governance factors are implied that the structure and accountability of the company. The concept of sustainable investing is already applied in developed country and now it is gathering strength towards emerging market. (EDHEC-Risk Institute, 2012).

There are many definitions provided by different authors but most widely accepted definition of social responsible investing is provided by (Social Investment Forum, 2006). According to SIF (Social Investment Forum,) "SRI is a process of investment which considers social concern, environmental concern, and governance concern as well as personal wealth or value of investors with investment decisions". Social responsible investment of green investing attracts the investors towards them to investing their money in socially responsible stock. as per the socially investment forum data approx. 10% of US investment are managed by the screening process of SRI. Socially Responsible Investing is used in several names, including 'sustainable investing', 'green investing', 'values-based investing', 'ethical investing', 'targeted investing', and more recently just 'responsible investing. Socially responsible investing, generally it means investing in companies that do some good work for society and avoiding companies that could be considered harmful (Frankel, 2015). Generally, socially responsible investors invest their money in socially responsible stocks and encourage corporate practices that promote environmental stewardship, consumer protection, human rights, and diversity. SRI is a process that takes into account social, environmental, and governance consequences into the investments, both in a negative way and positive way, within the context of financial analysis. SRI can be represented as a mechanism for investing & to identify the company that meets some standards or norms of Corporate Socially Responsibility and is increasingly there practiced globally (Tripathi & Bhandari, 2014,2015). A socially responsible investor invests their money in the stocks of socially responsible companies and penalizes the shares of other companies by not investing money in them, whereas conventional stocks are general stocks.

Both CSR and SRI are two different areas. The conception of CSR rests on the principles of give and take. i.e. companies take recourses from the society in the form of human recourses, raw material, etc. By performing the tasks of CSR activities, the companies are giving something back to the society. Investment of money in CSR activities, which has largely been a voluntary contribution and the strategies of the companies. But now it has been included in the law. As per companies act, 2013 u/s-135 states that every company having.

1-Companies net worth is ₹500 cr or more,

2-Company turnover ₹1000 cr or more, and
3-Company net profit is ₹5 cr or more.

are coming under the purview of law. Companies must have established a Corporate Social Responsibility Committee of the Board in during the financial year and also the companies must invest at least 2% of their net profit in CSR activities. If in case a company has not invested that much of money in a CSR activity, they need to pay the rest of the money to the Government. (Sources- companies act law)
The CSR activities include: -

- To control hunger,
- To control poverty,
- To encouragement of education.
- To build up gender equality and women empowerment
- To decrease child fatality and developing maternal health.
- To backing of public health.
- To Ensuring environmental sustainability. And
- To Employment enhancing vocational skills.

Socially Responsible Investment is a way to investing of money, that aims to incorporate environmental, governance and social factors into the investment decision, to managing risk in a proper way and generate sustainability in long run returns and also meet some criterion or standard of CSR practiced. There are several issues and guidelines of sustainability index and green index of UNPRI- United Nations principles for responsible investments, GRI- Global reporting initiative and NAPCC - a National action plan for climate change are the consequences of growing concern for environmental protection throughout the world. The Principles for Responsible Investment (PRI), is the world's preeminent proponent of responsible investment. United Nations Supported the Principles of Responsible Investment are a global channel of investors, who are working together and to bring all the Principles UNIPRI into their investment practice globally. It works to understand the consequences of investment implication in ESG factors (annexure - 4) and support its global network of its signatories' members and investors, and putting together all these factors into their investment and ownership decision. PRI works in the long-term interests of its members

in the financial markets and in the economy in which they operate, and ultimately to society and the environment as a whole.

According to the United Nations Principles of Responsible Investment (UNPRI), these are the Principles such as integrate the ESG Issue into investment analysis, ownership practice and policies, disclosure in investment, implementation the strategies in the industry, implementing the principles, and report of progress after implementing 5the principles. (annextures-3).
Sources- (UNIPRI).

According to (Tripathi & Bhandari, 2012), There are basically three ways/approaches for investors to make a green investment, these are thematic, screening, and commitment. The first approaches basically focus on the clean energy, technology, water, waste water management etc. screening implies positive screening(including) and negative screening (excluding) on the basis of companies' environmental criteria and lastly engagement implies that, a long run relation between environmental and company, to establish a dialogue on environmental issues and sustainable development, for the benefit of inciting companies to change habits in favor of society and environment benefit. Sustainable development of the environment is the core function of green invest or social responsible invest because of companies are pay efforts to protect the environment as well as sustainable development of the society, the Investors also are required to be more responsible society and ensure adequate funding towards green companies.

To segregate the socially responsible investment stock and conventional stock, Bombay Stock Exchange (BSE) has announced indices as a Proxy for SRI. BSE announced two different types of Sustainability Index, like GREENEX and CARBONEX.

1.1: Sustainability Index

Sustainability index is an index of shares of companies that companies manage to respect the environment, governance and future interests of society and do not seek immediate benefits. It is a type of composite index that traces the basic elements of ESG and it covers the natural resource, endowments funds, pollution level of present

and past, environmental management efforts of the company, contributions to the protection of global commons and the capacity of a Society to improve its environmental performance over time.

1.1.1: GREENEX

On the mid of the February 2012 Corporate Affairs Minister Mr. Veerappa Moily launched the BSE GREENEX index a new stock index of sustainable stocks at the Bombay stock exchange in collaboration with the Indian institute of management Ahmadabad (IIM-A) and g-trade carbon ex-ratting services private limited (g-Trade) is an India-based company. The top-ranked companies from of each sector like: steel industry sector, power sector, banking sector, cement industry, pharma industry, etc. have reached with a new index called BSE-GREENEX. On the starting of this index it takes to 20 green companies from BSE 100, and later it takes top 25 green companies from BSE 100 which meet energy efficiency norms, allowing interest to the investors to deceive benefits from the related cost saving, market cap and liquidity

The GREENEX is targeted at retail investors as well as institutional investors such as pension funds and asset managers seeking for an investment in companies with strong long-term prospects and developing green financial products. This indicator will help the economy to create an appropriate market-based solution for the industries, investors, and governments to promote energy efficient processes and to encourages to investors investing in economically and environmental friendly.

1.1.2: Why GREENEX

- This Index will enable the investors to track companies that invest in energy-saving practices in India.
- Investor invests their money in the mutual fund and mutual fund put these investments back into GREENEX registered company.
- GREENEX permits asset managers to create products to assistance investors invest their cash under green businesses/ green Undertakings.

1.1.3: CARBONEX

On 30th September 2010in collaboration with the government of UK, BSE launched a new index called BSE CARBONEX. S&P BSE CARBONES index is the first in India monitoring the performance of the companies that are included in the S&P BSE 100

index with regards to their obligations to reduce the risks associated with climate change. The index was created to respond to market demand for a sophisticated portfolio management approach Integrating risks and opportunities related to climate change.

Bombay Stock exchange launched S&P BSE CARBONEX index which is the first carbon-based thematic index of the country. BSE CARBONEX which will provide a strategic viewpoint of organizational commitment to mitigating climate change. This index is specially introduced to provide a measure and increase awareness of the dangers posed by climate change. CARBONEX will allow investors to evaluate the effectiveness of the companies constituting the BSE-100 index in terms of their commitment to reduce the greenhouse gas emissions. Components of BSE CARBONEX ended or underweighted compared to the benchmark on the basis of their performance in the evaluation process. The evaluation will be based on the carbon emission and the carbon efficiency of the companies. The index will encourage people and the investor to invest in companies that perform well on the index thus promoting low carbon growth.

Socially responsible indices in different country

In the year 1971, the United States first introduces the socially responsible mutual fund called "Pak World Fund". In the year 1990, the first social responsible indices were developed bay united states named DOMINI 400 social index. The purpose of the indices is to measure the performance of the socially responsible stock in us. After that, it is speeded globally and several socially responsible indices created by different countries. The given below table shows the overview of some major social responsible indices around the world. In India, there are two social responsible stocks like CARBONEX and GREENX which was introduced in 2010 and 2012 respectively.

Table -1: Socially responsible indices in different country

Name of Social responsible investment Index	**Country**	**Year of developed**
Domini 400 Social Index	United state	1990
Citizens Index	United state	1995

Dow Jones Sustainability World Index	Switzerland	1999
Calvert Social Index	United state	2000
Jantzi Social Index	Canada	2000
ASPI Eurozone Index	France	2001
FTSE4 Good Index	Great Britain	2001
Ethibel Sustainability Index	Belgium	2002
Morningstar SRI Index	Japan	2003
RepuTex SRI Index	Australia	2005
Corporate Sustainability Index	Brazil	2005
Global Challenges Index	Germany	2007
ESG India Index (NSE)	India	2007
KLD Global Sustainability Index	United state	2007
FTSE ECPI SRI Index	Italy	2008
CFCSR 50 Index	China	2009
CARBONEX (BSE)	India	2010
GREENEX (BSE)	India	2010

SOURCES- (ETFdb)

1.1.4: BSE Large Cap

Large cap applies to those company have more than 5 billion US dollars' worth of market capitalization. Large cap means large market capitalization. it is calculated multiplying the stock price per share into a number of outstanding shares of the company. BSE large cap represent the top ranked 70% of the total market capitalization of the BSE all cap. particularly this index was developed to represents the large capital segment company in Indian stock market. The listed companies of this index were well established and strong market presence. Generally, investors are considered as a safe investment company.

1.2: News Announcement

The factors and events exist that usually influence the stock market volatility either by direct or other that do indirectly. According to the Peter & Lynch (2016), an important point to remember before investing in the market is that there will always be an event behind every stock volatility in the market and perform the way these companies wants. The public news event is a message in the interest of public spread

by the media without any charge, with the objective of boost awareness, and changing behavior and acuity towards an investment decision in the stock market. Whereas there is private information which does not come into public interest and companies or other user wish to keep it hidden from the market.

Media plays an important role in the stock trading which connects us in the stock market and gives us a different type of news both in positive and negative. The news reminds us where to invest or not. News announcement changes the sentiment of investors towards an investment decision in the stock market. Zweig, (1973) argues that sentiment comes from preconceived expectations of investors on the value of assets.

According to the Black, (1986) the sentiment as the noise on the financial markets. Lee et.al, (1991) define investor sentiment or mood of the investors as the constituent of investors' potentials regarding sStock returns which are not justified by fundamentals. Baker & Wurgler, (2006) denotes that the sentiment or tone of investor generally refers to the propensity of investors to speculate or investor optimism (pessimism) about stocks returns. Baker & Stein, (2004) define investor sentiment as investors' misevaluation of asset returns. To bringing all the definition together, that the investor sentiment reflects the difference between current asset prices are the future.

The sentiment can be broadly defined as the opinions about future cash flows or discount rates that are not supported by the usual fundamentals and risk of investment which is not justified (Baker & Wurgler, 2006). Sentiment indicator is intended to show how the group feels about the market and the environment, etc. the sentiment indicators seek to measure the effect of factors, such as microeconomic condition, corporate governance, news announcement, unemployment, inflation and future behavior policy. In generally, investor's sentiment means the investor's behavior towards market risks.

The news announcements are one of the most important factors affecting the investor's sentiment towards investment. Therefore, there are various factors that are basically affecting the stock market, this will generally change the investor's acuity towards the investments made in the stock market says, (Kerl et al., 2014). There are several factors like news, corporate announcement (including CSR news), political announcement, business events, financial news, economy related news like

macroeconomics announcement, global stock market, inflation, budget news, new government policy etc. are usually influence the stock market volatility either by directly or indirectly and affects the investors sentiment also (Kerl et al., 2014) & (Mian & Sankaraguruswamy, 2012).

1.3: Macroeconomic News:

On the financial markets, macroeconomic announcements are often covered by movements of the portfolio in the stock market. Hops in exchange for flow exchange also around the arrival of macroeconomic fundamentals recommend that these announcements contain news that is relevant for the portfolio investor. The theory provides a solid macroeconomic situation to perceive the news as the risk, so for that investors command a reward in addition to the reward for the traditional risk factors. Peter et al., (2013).

Macroeconomics is the branch of economics that studies how individuals, households, firms, and industry take the decision to grant the limited resources. Typically, in markets where good or services are being bought and sold and it is otherwise known as the performance of an economy. It focuses on the aggregate changes in the economy such as interest rate, unemployment, fluctuations, growth rate, performance, gross domestic product, economy, and inflation. Macroeconomics analyzes all aggregate indicators and the microeconomic factors that affect the economy. Government and business houses are using macroeconomic models to assist in the development of economic policies and strategies.

Microeconomics has been referred to as a “the bottom-up view of the economy”, or “how people deal with, time, money and resources.” One of the objectives of microeconomics is to analyze market mechanisms that establish relative prices of goods and services and the allocation of scarce resources among many alternative uses. It also analyzes market failure, where markets fail to produce efficient and describe the theoretical conditions needed for perfect competition.

Whereas Macroeconomic news is the news relating to the RBI interest rate for commercial and non-commercial banks, unemployment, market fluctuations, forward-looking fundamentals, growth rate, output and housing, consumer confidence, gross domestic product of nation, economy, and inflation. Here the macroeconomic news is divided into two parts, like Scheduled News and Unscheduled News.

1.3.1: Scheduled news:

Scheduled news is defined as news events that have pre-programmed publication hours with a fixed date that is known to the public beforehand. This includes economic data such as interest rate announcements by government & private bodies, that are published regularly (for example, budget news, product news, conference calls, company profits announcements, mergers and acquisitions, etc.).

1.3.2: Unscheduled news: Unscheduled news is defined as news events that you know are coming, but you do not know exactly when to expect details that will affect market prices. Unscheduled "as random news events (for example, demonetization, profit orientation, acquisition announcement, kidnapped executive, etc.). Unscheduled news that represents the majority of news events appearing on news screens every day. Unscheduled describes something that is not planned or planned in advance.

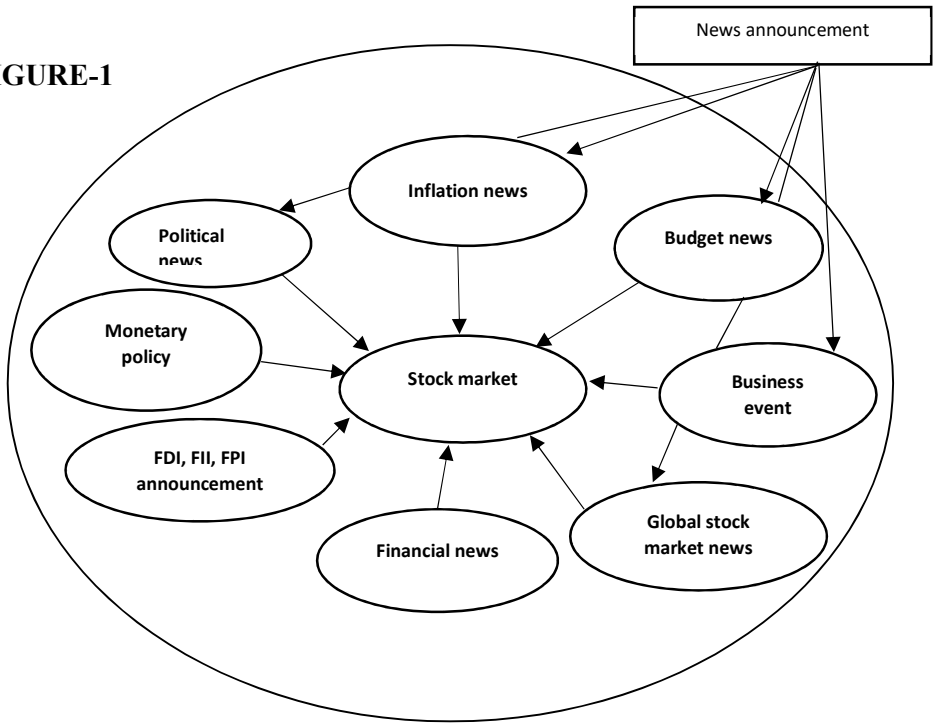
1.4: Factors influencing stock market

It was noted that investors are sensitive to the benchmarks. When a particular stock price drops due to some unpleasant news, many investors are not inclined to sell it at a loss. Here, the benchmark is the initial cost of purchase. Investors tend to hold themselves to their losses. But some investors are anxiously waiting for the price of the shares to return to their purchase price before deciding to sell it without rationally assessing the situation. And finally, it can be said that those investors are generally "hate to lose". The sentiment of investors will be influencing the stock market as well as stock returns. The sentiment of investor will be affected by many factors, such as microeconomic condition of the economy, corporate governance policy/ corporate

announcement, micro-economic news announcement, unemployment, inflation, budget news, monetary policy global news and global stock market news.

1.4.1: Factors affecting stock market

FIGURE-1



ECONOMY

1.5: Overview of Indian stock market

stock markets play a vital role in the processes of economic development by performing several activities like streamlining the investment processes, mobilization capital, providing risk pooling and sharing services and give credit. Before

liberalization, the Indian economy was closely controlled and protected with so many Measures such as the licensing system, high tariffs rates in investment Sectors, investment in core sector is limited etc. During the 1980s, economic growth has been highly volatile due to its dependence on borrowing for the correction of the current account deficit.in the year 1991 govt of India introduce economics policy to reduces the imbalances and make it a structural reforms of Indian economy. at particular that point of time the financial sector of India was very unorganized, and its scope was limited to obligations, commodity markets, Mutual Funds, equity, insurance, and Retirement. In order to organised the security market a regulatory board was framed name SEBI and first electronic stock exchange (NSE) national stock exchange was set up . The purpose behind this was streamlining the investment processes, mobilization of resources and credit.

A stock market is a place where the share of the company are traded either physically or virtually where the buyer can place order of stock and seller sell it. share are traded in electronically as well as physically for electronically share trading Demat account is required. The Indian stock market functions on two major exchanges BSE (Bombay Stock Exchange.) and NSE (National Stock Exchange.). BSE ranked at 10th place globally, with a market capitalization of more than $ 1.6 trillion. in terms of a number of listed companies, BSE is the world largest exchange and NSE ranked 11th place in globally as on November 2014. (Sources- business today – 28th Nov 2014.)

1.5.1: Bombay stock exchange

Bombay stock exchange BSE is one of the oldest stock exchange in Asia landscaped at dalal street, Mumbai. As in terms of market capitalization, BSE has 1.64 trillions market capitalization ranked 10th position globally as on 2016. At first, during 1855, some stockbrokers gathered under the Banyan tree and later when the stock broker increased the group changed 1974 and In the year of 1875, the group Became an official organization called "The Native Chor and Stock Brokers Association. "In 1986, BSE developed its index called BSE SENSEX to measure the efficiency of Exchange performance. BSE provide transparent trading services to its investors for the trading of Derivatives, equities, bonds, debentures, mutual funds and IPO etc. more than 5000 companies are listed on Bombay stock exchange. BSEprovides trading of equity and derivatives of small and medium scale enterprise . as on august 2016 BSE have US$1.6 trillion market capitalization and world 10th ranked stock exchange in terms of market

capitalization. BSE is the 5th most active stock exchange in terms of transaction handling. To receive iso 9000:2000 certification BSE is the exchange in India and the second exchange globally.

1.5.2: National stock exchange

National Stock Exchange (NSE) incorporated in 1992 in Mumbai and in 1993 it became a stock exchange. In june 1994 national stock exchange started its operation in wholesale debt, in Nov 1994 its started operation in equity segment and June 2000 in derivative segment. The main purpose of this stock exchange was to bring transparency in the stock market. Nse have fully modern and fully automated screen-based interchange system with more than two lakh terminals, which Provides investors the opportunity to trade from anywhere in India. Now NSE has more than 1600 listed company having US $ 1.41 trillion (till march 2016) and placed 11th rank of the stock exchange in terms of market capitalization worldwide. Nse created a security system called National Securities Depository Limited (NSDL) which allow investors to hold and manage shares and bonds in electronic form through the DEMAT account. National Security Depositary Limited's electronically regulated the safety, convenience, transparency, low transaction price and efficiency in trade.

1.6: Objectives of the study

- To study the differences in the performance of Social Responsible Stock portfolio and Conventional Stock portfolios
- To examine how investor sentiment impacts the stock price of SRI and Conventional Stock portfolios when macroeconomic news announcements are made.

1.7: Theories of stock market

The word "portfolio" can be defined as; all decisions determining the future prospects and behavior of an investor. The "Portfolio" can be defined as; the decision relating to the future prospects of an investor (Sharpe, 1970). According to (Bowen, 1984) portfolios contains several types of an asset like the plant, financial asset, property etc. The portfolio theory recommended how individual investors logically and economically use their intensity to diversify their investments to optimizing portfolios, and they compared risky asset to less risky asset. In simply it can be said that portfolio

theory is all about the findings the balance between increasing return and reducing the risk associated with the portfolios. There are several portfolio theories like traditional theory, modern portfolio theory(MPT), random walk theory, efficient market theory, Dow theory, etc. but in this study, I have considered the traditional portfolios as well as modern portfolio theory (MPT). MPT minimizes the portfolio risk by balancing the asset based on some mathematical and statistical framework which quantify the amount of diversification by calculating the standard deviation on the individual asset, return of the asset and coefficient of correlation between the assets. The theory is firstly introduced by Harry Markowitz in their article "portfolio selection", 1952. this theory is otherwise known as Markowitz model of risk-return optimization. Whereas the traditional portfolio theory is a non-existent approach to balancing a portfolio with different securities, such as bonds & stocks, from different companies and sectors. The main objective of the traditional theory is to select that kind of asset which has a negative or little correlation with each other so the risk associated with the portfolios is reduced.

In this Modern Portfolio Theory (MPT), the common widely accepted method like CAPM (capital asset pricing model), and different risk adjustment measures like Jenesis alpha measure and net selectivity measure are used. On the basis of this measure, beta, the coefficient of variance, average return, the standard deviation of the portfolio, Sharpe ratio, Information ratio, Treynor ratio, systematic risk, Jensen's α, and Fama's decomposition measure are calculated. Beta and standard deviations are calculated by measuring the volatility of portfolios. Sharpe ratio, Treynor ratio, and Information ratio are calculated to evaluating the investment performance. Jensen's α is required to evaluating the average return of the portfolios and Fama's decomposition measure is used to Measuring the risk-adjusted return on portfolios.

The Markowitz idea of MPT is still used in CAPM based model indirectly. But there is some fundamental difference between these two model. Practically equilibrium model has to introduced some impractical assumptions to derived a simple relationship between the return of asset and market portfolio (Elton et al.,1987) and (Sharpe, 1964). However, the current studies are collected data from different proxies of Bombay stock exchange that shows that the relation is unstable. In fact, beta behave so extraordinarily that the information provided by CAPM can be best serve as the first order approximation.

In the second part of this study to belongs to the weather investor sentiment will affect stock returns when news announcement is made i.e. (microeconomics news). Here the data relating to the stock market are time series and the news announcement are cross section data. To analyzes, the both data series the panel regression model applied to analyses the impact of news announcement on stock return and sentiment as well as sentiment on stock returns of SRI and NON-SRI stock portfolio.

1.8: Need and significance of study

According to United Nations Principles for Responsible Investments, those companies which fulfil the criteria need to make the investments under the categories such as Environmental, Social and Governance. As per the Previous studies it is found that the socially responsible investment stocks are giving better returns than the conventional stocks (for eg, Ioannou et al , (2015) ; Seth, & Sharma, (2015); Murthy et al., (2014); Galema et al., (2008); Hamilton and Statman, (1993); Climent et al., (2011) during the financial crisis, after and before financial crisis as well. This reveals that the SRI stocks are found to be the attractive investments for the investors. Further, numerous studies were conducted to examine the impact of news announcements on the stock returns in the markets such as US, European and Asian markets (for example, Andersen, (2007); Fang & Peress, (2009); Cai et.al. (2009) and Feuerriegel et.al. (2016)). Few studies also observed that there is an asymmetric relationship between the positive and negative news that gauge the investor confidence in equity markets. For instance, the scheduled news such as monetary policy and unscheduled news such as the announcement of demonetization have mixed responses in the stock markets. However, certain stocks have insignificant response towards news announcements. The study is an attempt to know whether there exists any difference in the SRI and conventional stocks return due to the news announcements and investor sentiment..

1.9: Data sourses-

The secondary data are collected from different sources like Bse India, RBI, SEBI, IMF, Google finance, World Bank, IMF, Bank For International Settlement, etc. The microeconomics news and announcement dates used in this study were extracted from Returs news, Google news, Business standard, Economics times, and there impact on BSE SENSEX, BSE LARGE CAP, BSE GREENEX and BSE CARBONEX closing price before and after 7 days in Bombay Stock Exchange (BSE) website. The period of the study was 1st JAN 2013 to 31st DEC 2016, the number of macroeconomic

news announcements collected was 376 in between 192 scheduled news and 184 unscheduled news. In order to achieve the objective, the daily closing prices of BSE SENSEX BSE LARGE CAP, BSE GREENEX ,BSE CARBONEX, IPO Value And no of Issue , Foreign Exchange , Corporate Debt Turnover, BSE Futures, Trading Volume of Put and Call, Foreign Capital Inflow, Mutual Fund, were obtained from different government online database of BSE, RBI, SEBI, IMF, WB,ETC. (http://www.bseindia.com/sensexview/IndexHighlight.aspx?expandable=2&type=4#markets_ind) and (https://www.rbi.org.in/Scripts/Statistics.aspx) , (https://www.imf.org/en/Data), (http://www.asiaindex.co.in/indices/equity/sp-bse-sensex-1-month-realized-volatility-index), and (http://www.sebi.gov.in/sebiweb/investment/statistics.jsp?s=all)are used.

1.10: Chapter scheme

The study is reported in six different chapters.

The first chapter contains introduction about the study and overview of the sustainability index of BSE-like BSE GREENEX and BSE CARBONEX and non-conventional stocks like BSE LARGE-CAP.INDEX and provides the details regarding share price and trading volume and market efficiency and also details about the news announcement and investors sentiment.

The second chapter provides the review of literature in both studies like socially responsibility investment and macroeconomics news announcement.

The third chapter provides details about the research design and research method adopted for this study.

The fourth chapter contents data analysis. Especially in this chapter various risk adjustment measure like Sharpe ratio, Jensen's α, Information ratio, Treynor ratio, and Fama's decomposition measure in the first objective and panel regression model and descriptive statistics in the second objective.

The fifth chapter depicts the findings, conclusion suggestions, and the scope of further study.

The sixth chapter gives the details of the bibliography and reference.

CHAPTER-2

2: LITERATURE REVIEW

2.1: Studies relating to Socially Responsible Investment

With increasing attention to protecting the environment, there are growing calls from the government, corporations or media, to make responsibility the environment is an integral part of investment decisions making (Boulatoef & Boyer, 2009). Socially responsible investing green investing is not limited to the investment community and exclusion screening. In fact, it is an investment path driven by values and beliefs of the investor. There are four investment approaches of socially responsible investment like, - best in class, Exclusion, participation and advocacy. It can be commonly associated with the other investment framework in finance says (Hudson, 2006).

The performance of financial market depends upon the efficiency of the stock market, says, Marashdeh & Shrestha, (2010) and Nath & Mishra, (2010). But according to (Seth & Sharma, 2015), both efficiency and integration are required for the stock performance in the financial market and that the degree of inefficiency generally not affected the financial crises but the integration of among stock market reduce the effect of recent financial crises.

Hassan & Marston, (2010) and Beyer et al., (2010) both have focused on determinants of overall voluntary disclosures of US-based companies, whereas Singhania & Gandhi, (2015) examined the relationship between social and environmental disclosure on Indian companies for constructing a disclosure index and found that operation of the

company, sales turnover, admin expenses, cost of employee and interest paid to company are significant in determining the disclosure of index.

Tripathi & Bhandari, (2015) examined the performance of SRI stocks on Indian stock market and conclude that socially responsible investing company performs better as compared to other companies and at the time of financial crises, it is more helpful and more rewarding at that period rather than a penalty. Hume & Larkin, (2008) found that the performance of socially responsible investing firm was higher prior to 2000 that means after financial crises the performance of socially responsible firm was better and also find that today's investor is more interested in investing in socially responsible firms. King & Lenox, (2001) concluded that the stronger environmental performance leads to better financial performance and it was significantly better than other firms. Elias, (2012) analyzed the performance of SHARIAH compliant stocks and found that SHARIAH compliant stocks return are better than the other conventional stocks return. The SHARIAH compliant stocks are the same as sustainability stock. SHARIAH rule is the same as BSE GREENEX and CARBONEX rule. Murthy et al., (2014) and Di & Kostovetsky, (2014) concluded concluding that socially responsible companies are performing better than other companies during the financial crises period and after the financial crisis period. According to (Tripathi & Bhandari, 2012) at the time of financial crises green stock or conventional stock perform better than non-green stock or non-conventional stock and it the safer place to invest money both the crises and non-crises of the economy. But (Shank et al., 2005) and (Benson et al.,2006) give a negative result stating that investors are less socially conscious at the time of financial downturns and there is a little difference between socially responsible stocks and conventional stocks. Further, Cortez et al., (2012) examined the performance and behavior of US and European socially responsible funds and found that most of the SR funds of US and European country don't show good performance in relation to both SR and NON-SR benchmark. According to the (Managi et al.,2012), there is no statistical difference in means and volatilities generated from the socially responsible index and conventional model and they found that smaller SRI firms receive more return and larger SRI firms get a smaller return in US, UK, & JAPAN. Environmental and Socially Responsible investment funds are higher risks because there are very limited numbers of stocks in which investors invest their money. For this reason, green funds and sustainability

funds seem to show a lower outcome than conventional funds during the crisis period says (Climent & Soriano, 2011).

Young & Proffitt, (2003), conducted a study to compare socially responsible fund with the traditional fund as per the risk, cost and return and find that cost and return both are lower but the risk profile of SRI funds fit into the traditional funds. In addition, regular risk SRI funds are slightly lower than the average. But according to the RBC Asset Management, (2007) SRI/Green Investment does not result in lower investment returns. There exists a relationship between financial performance and Corporate social responsibility (Di & Kostovetsky, 2014) and also find that the changes in the firm CSR policies are negatively impacting on future stock returns and the democratic external political environment is correlated with more CSR behavior. Erhemjamts & Venkateswaran, (2013) and Schnietz & Epstei, (2005) concluded that corporate socially responsible strengths are positively associated with both the investment policy and organizational strategy. But (Ioannou & Serafeim,2015) finds that most of the analysts of higher-status brokerage house and more experience experts are the first to move the relationship between CSR rating and optimism investment advice and also find that there is no significant difference between CSR rating of the firms and the experts forecast errors and also imply that Learning is unlikely to explain the observed changes in Recommendation.

Nofsinger & Varma, (2013) conducted a study to check the performance of socially responsible mutual funds and conventional mutual funds, during the periods of market crises and economic downturns and found that SRI attributes, particularly Especially ESG, socially responsible investment funds show better performance than traditional funds during the market crisis, but in non-crisis periods the performance is unbalanced. To explain that popularity of SRI is growing, when it mostly generates negative returns (Statman, 2004) and (Bollen, 2007) disagree the concept provided by them and give their thought that investors gain some advantage from the external effects of investments in a manner that is consistent with trust and belief whereas (Oikonomou et al., 2012) argued that socially responsible investors sentiment is weak and it is negatively correlated with market risk while fake less behavior of the investors is strongly correlated to market risk.

Boulatoef & Boyer, (2009) correlated the SRI farm/green firm with traditional/non-green farm and found that NASDAQ listed companies surpassed environmental companies but some green firm also give better performance but according to the (King

& Lenox, 2001) the performance of strong environmental companies is better than the conventional farms.

Schnietz & Epstein, (2005) examined whether there is any financial value in a corporate social responsibility reputation during the financial crises of the economy, that is, if the social responsibility reputation acts as a reservoir of goodwill during financial crises and found that at the time of financial crises, the reputation of the social responsibility protected firms from their devaluation of the stock even when controlling for possible effects of trade and industry.

Bauer et al., (2005) conducted a study to evaluate the performance of the ethical fund and conventional fund during the period of 1992-2003 and finds that sometimes ethical fund gives better results and sometimes low as the comparison to conventional stock they conclude that SRI funds give an average return with low bias and estimated errors. This implies that the empirical average returns of the SRI fund must be consistent. i.e. good profitability assessment Sri population returns, and effectiveness with low possible variance (Greene, 2008). In this regard, accounting for measurement errors and misspecification is critical (Kennedy, 2008).

Hence, as per the previous studies, some researcher said that it gives good results and someone said that low results and someone neutral. so overall, we can say that the results of SRI fund are mixed. So, this empirical evidence of SRI gives me a path to conduct a study in an emerging market like India.

2.2: Studies relating to News Announcement and Investor Sentiment

As per the traditional theories assumed that there is a little correlation between investors sentiment and stock market and there is no effect stock market but (Bandopadhyaya & Jones, 2016) measuring the investors sentiment on USA equity market and find that news events are correlated with the price movement in the equity market and ultimately price movement affects the investors sentiment. Whereas Fisher & Statman, (2000) and Brookins, (2014) conducted the study in the US. stock market and concluded that there is no relationship or negative relationship between investors sentiment and news announcement.

Baker & Wurgler, (2006) examined that how investor sentiment will affect the earnings of stocks and found that, investor's sentiment has strong effects on the stock prices. And they also found that when market sentiment is low, small stocks deserve especially high subsequent returns, but when the market sentiment is high, there is no size effect. Mian

& Sankaraguruswamy, (2012) examined whether the firm-specific earning news announcement influence the investors sentiments at the market and they found stock price are affected when different earnings announcement comes and the sensitivity of share price on good earnings news is higher in periods of high market sentiment periods rather than during periods of low market sentiment, while the stock price sensitivity to bad news came up during periods of low market sentiment than in periods of high market sentiment. But in the other hand investors' reactions are stronger when the price-related news contradicts prevailing perception (Conrad et al., 2002) and (Livnat & Petrovits, 2009). According to the traditional classical finance theory, there is no role of investor sentiment on stock price changes and expected the future return of the securities, and the same conclusion is also given by (Brookins, 2014).

Investors are reacting differently when loss firm and profit earning is the concern (Hayn, 1995), (Pinnuck & Shekhar, 2013) and (Darrough & Ye, 2007), investor sentiment probably has a different effect on investors' assessment of earnings news from companies' loss as well. According to (Kahneman & Tversky, 1979), the investors are more risk-seeking in the loss firm, that's why the investors view loss domain in the high sentiment period the earnings decreases slightly negatively and increase slight positively.

Curtis & Richardson, (2014) investigate whether the investor receive care and related costs and mispricing of income news, weather attention of the investors are measured by the social media news and they find that high levels of investor focus and the attention are highly associated with earnings announcement returns and earnings gains and investors are highly attentive towards the social media active relating to the earnings announcement and impact of the pricing and mispricing of earnings news. (Folsom, 2015) examined the impact of the sentiment of the investor towards the market reaction to a particular earnings news announcement that means the investors earning response coefficient or ERC and find that when the earnings announcement has increased the sentiment is also increased and that will affect the stock return of the company. (Patatoukas, 2014) also, gives the same results the Stock market prices seem to be insensitive to changes in total earnings.

The impact of particular sources of news like Financial Times Deutschland news announcement on stock prices and trading volumes fluctuations examined by Kerl et

al., (2014) found that the positive information is associated with positive stock return and vice versa. Further, it is also argued that the high-attention news almost directly moves the stock prices to their new valuation levels, whereas the price balancing process takes much longer time in case of low-attention news. Azuma et al., (2014) investigated that Cross section of media coverage and expected stock returns, in which it was found that the post-announcement returns depend on the actions or activities covered by the media, and the media covered the event samples and conclude that pre-event sentiment prevailing behavior of investors in the short run and affects the post-announcement return in a significant manner.

Fang & Peress, (2009) has found that without media coverage stocks gains higher returns/ revenue than the stocks with high media coverage, even after accounting for all well-known risk factors. However, (Loukusa, 2011) found whether the stocks which have no media coverage or little bit coverage on media earn higher revenue/ returns than stocks with high media coverage and found that in the particular period media coverage is positively related to both analyses climatological dispersion and peculiar fluctuations.

Tahira & Mizuno, (2016) examined the performance of an equity index trading strategy based on the frequency of press releases are better than that of a trading strategy that randomly buying or selling his stock index and concludes that the news announcement affect the performance of share trading and the same positive results also given by Mizuno et al., (2015) noted that the stock market responds strongly to the novel, and current news announcement and concluded that stock prices and transaction volumes showed a significant response to a news article when it is novel and topical.

Andersen, (2007) investigated the impact of microeconomics indicator on the stock and found that there is a significant impact of microeconomics announcement in the European stock market. A similar study was also conducted by Harju & Hussain, (2011) in the European equity market, they have found that US microeconomics surprises imply immediate and significant reaction of 5 min intraday volatility and yields of the main European stock indices.

The similar effect of macroeconomic releases on stock market volatility examined by (Rangel, 2011) which found that there is the very little impact of news announcement over stock trading. Alanyali et al., (2013) quantified the relationship between developments in financial news & decisions taken in financial markets and found that there is a positive interrelationship between the stock returns and the news

announcement. Further, there is proper positive correlations between the daily number of listed companies under Financial Times news and the transaction volume of that particularly listed companies stock both on the day before and on the day news announcement. Schmeling, (2009) in a study conducted in 18 countries to find out whether any interrelationship between investor sentiment and future stock returns. He takes "consumer confidence" as a proxy of investor sentiment for the individual. He concludes that a negative sentiment predicts overall stock market returns an average of the countries. When sentiment of investor is high towards market risk, the future stock returns tend to be lower and when the sentiment of investors is low, the future stock returns tends to be high.

Kurov, (2010) examined whether the microeconomic news announcement like declaration monetary policy news have a significant impact on the sentiment of investor and find that the sentiment of the investor depends upon the market condition like bull & bear market and the effect of monetary policy largely affect the bear market period stocks. (Brzeszczynski et al, 2015) also, gives the same result the public information or monetary policy news will determining the price of shares in the market. Whereas (Bernanke & Kuttner, 2005) argue that the effect of monetary policy on expected stocks returns may be related to the impact of monetary policy on investors risk aversion. the results tend to the overreaction of the investors will affect the stock price and finally, we can say that the monetary policy plays an important role when investor sentiment is the concern.

2.3: Studies relating to different variable taken by measuring Investor Sentiment

Chi at el. (2012) conducted a study to examine the investor sentiment at Chinese stock market by using the mutual fund as a proxy of investor sentiment and find that the sentiment of the investor has an incredible impact on stock return.

Yang & Wu, (2010) studied the relationship between stock price volatility and investor sentiment in Taiwanese stock market. they specified the short sale volume can be an individual leading indicator which is useful to study the effect of investor sentiment on stock price movement and they also take put & call ratio, trading volume, and buy & sell order are considered to measuring the sentiment of the investor.

Sehgal et al., (2009) studies the investor sentiment and its relationship with a market performance followed by the methodology of the (Baker & Wurgler, 2006). They identified several macroeconomic indicators which can be used as the indicator of investor sentiment. These macroeconomic factors indicators are GDP of the country, inflation, unemployment, corporate profit, earnings surprises, market-based factors like put & call ratio and the total turnover of the share etc.

Zhu, (2012) and (Huang, 2014) both are studied on investment sentiment and stock volatility return by taking VIX Index, Discount of closed-end funds, Trading volume and turnover rate through the principal component index. Through this principal component index, they formed a composite index and says that the composite index will significantly correlation to the stock index of the country i.e. Shanghai stock index is able to forecast the future market trend.

Chongi et al., (2014) takes the turnover ratio, money flow, HIBOR, short-selling volume and the return of the markets to measuring an investor sentiment through composites index. They said these are the basic indicator for measuring the investor sentiment.

Deshpande & Svetina, (2011) studied to check is any news announcement will affect the retailer investor sentiment or not. they take news announcement related to quarterly news announcement of the company and their stock return from a local newspaper and find that there is a statistically significant difference between stock price and firm earnings and news announcement & stock return

Birz & Lott, (2008) and (Mitchell & Mulherin, 1994), conducted a study on macroeconomic news announcement from newspaper and their impact on stock return by taking four macroeconomic data series like announcement on durable goods, retail sale, unemployment and GDP and find that the news announcement relating to GDP and unemployment are significant impact on stock return.

To measuring the investor sentiment on stock return (Baker & Wurgler, 2006,2007,2012) make a composite index based on six factors like share turnover, no

of IPO, IPO value, dividend premium, close ended fund and mutual fund. They published a monthly sentiment index on their website which is based on the new work stock exchange. And in 2016 now they removed stock return from their composite index. To measuring the investor sentiment the (Bakar & Wurgler,2006) method is very important and maximum author followed these principles to measuring the investor sentiment.

Chandra & Thenmozhi, (2013) conducted studies in the Indian context by taking different variable on national stock exchange such as forex, foreign capital inflow, corporate debt turnover, turnover in nifty index futures, dividend premium, no of IPO, and IPO value, put and call option, total buying and selling volume, and total share turnover followed by (Bakar & Wurgler,2006).

Hence In order to achieve the second objective daily closing prices of BSE Sensex, BSE large cap, BSE Greenex ,BSE Carbonex, IPO Value and no of IPO issue , foreign exchange , corporate debt turnover, BSE Futures, Trading Volume of Put and Call, Foreign Capital Inflow, Mutual Fund, were obtained from different government online database of BSE, RBI, SEBI, IMF, WB, are taken followed by the method developed by (Baker & Wurgler 2006), (Chandra & Thenmozhi, 2013) and (Mian & Sankaraguruswamy,2012) etc.

Blume et al., (1977), Elton et al, (1998), Durbin & Ng, (2005), Nayak, (2010), and (Chandra & Thenmozhi, 2013) taken as corporate debt / corporate bond turnover to measuring the investor sentiment because it provides expectable cash flows for both issuing company and investor as well, payment of capital at issue, steady payments of interest and return of capital at maturity.

CHAPTER-3

3: RESEARCH METHODOLOGY

3.1: Data and sources

The study is a combination of both primary and secondary data. For the first objective, it totally depends on the secondary data. Secondary data were collected from the respective sites of stock exchange. For the current study, there are basically two types of portfolios (socially responsible stocks portfolio/conventional stock, and general company stocks portfolio/ non-conventional stock,) over the 4-year period January 2013 to December 2016 and microeconomics news announcement and the impact of the news announcement on stock market are taken, news are collected from google news, BUSINESS STANDARD, ECONOMICS TIMES, and RETURES over one the year 2016 and BSE SENSEX, BSE GREENEX and BSE CARBONEX and BSE LARGE CAP before 7 days the and after 7 days of news announcement are taken into consideration. BSE GREENEX and BSE CARBONEX Index have been taken as the proxies for socially responsible stocks portfolios and BSE LARGE CAP as the proxies for general stocks portfolios. All the calculations are based on the daily adjusted closing stock price of these proxies. Daily adjusted closing stock prices are extracted from the BSE database, and the risk-free return data are extracted from RBI database and the values of adjusted closing stock price are converted into the simple percentage of returns. Here 91 days' government Treasury -bills have been taken as a proxy for the risk-free rate of return from the RBI database. Next, descriptive statistics, portfolio beta (βP) and different risk-adjusted measures for performance evaluation like- Treynor ratio, Sharpe ratio, Jensen's α, Information ratio, and Fama's decomposition measure

and Pearson's coefficient of among these portfolios. The analysis has been done for total period (4 years). This is done to analyses returns over a shorter period of time.

For the achieving the second objective, it depends on the secondary data. Only secondary data are considered for achieving the objective. the investor sentiment, as well as impact of macroeconomic news announcement on stock return, are considered in this objective. The macroeconomic news announcement will be collected from different sources like google news & google trends, returs news, economic times, business standard electronic version of newspapers from 1st Jan 2013 to 31st Dec 2016 a period of 4 years. The daily closing prices Of BSE Sensex BSE Large Cap, BSE Greenex ,BSE Carbonex, Ipo Value And No Of Issue , Foreign Exchange , Corporate Debt Turnover, BSE Futures, Trading Volume of put and call, Foreign Capital Inflow, Mutual Fund, were obtained from Different Government Online Database of BSE, RBI, SEBI, IMF, WB, etc. These data are collected to measuring the investor sentiment in Indian market when the macroeconomic news announcement is made followed by the construct developed by (Baker & Wurgler,2006), (Chandra & Thenmozhi,2013) (Yuan,2012), (samarakoon, 1999) (benic &feanic,2008), (brown & chieff,2004), (mian & sankaraguruswami,2014), (Weber, et al., 2012), (Dorn & Huberman, 2005), (Schlarbaum, et.al.,1978), (Schmeling, 2009), and (Glaser et. al., 2007) will be used.

3.2: Methodology applied:

Objective -1:

For the first objective, to study whether there exists any difference in the performance of SRI and Conventional Stock portfolios, towards achieving this objective, I have been used (CAPM) capital asset pricing model, and different risk adjustment measure like: beta, coefficient of variance, average return, standard deviation of the portfolio, Sharpe ratio, Information ratio, Treynor ratio, systematic risk, Jensen's α, beta, coefficient of variance, average return, standard deviation of the portfolio, Sharpe ratio, Information ratio, Treynor ratio, systematic risk, Jensen's α, and Fama's decomposition measure are calculated and Fama's decomposition measure are calculated. Beta and standard deviations are calculated by measuring the volatility of portfolios. Sharpe ratio, Treynor ratio, and Information ratio are calculated to evaluating the investment performance. Jensen's α is required to evaluating the average return of the portfolios and Fama's decomposition measure is used to Measuring the risk-adjusted return on portfolios.

These are the globally accepted methodology as used in Tripathi and Bhandari (2014), Hamilton et al. (1993), Statman (2005) and Hume and Larkin (2008) is in their study to evaluate the performance of the different stock portfolio.

Objective -2:

In the first objective, to examine the difference in the performance of SRI and Conventional Stock portfolios, then it will move towards the investor sentiment and macroeconomic news announcement impact on the performance of SRI and Conventional Stock portfolios

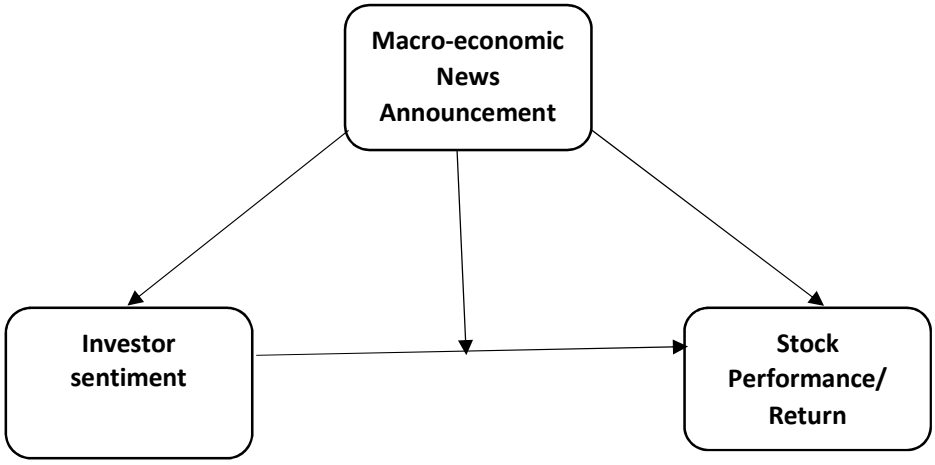
Towards the achievement of the second objective to examine how investor sentiment impacts the stock price of SRI and conventional stock portfolios when macroeconomic news announcements are made. Both primary and secondary data are considered for achieving this objective. News events that took place relating to macroeconomics in India will be collected news from 2013 to 2016 and panel regression model is used to determining the impact of impact of investor sentiment on the stock return when stock macroeconomic news announcement is made. First of all, the macroeconomic news announcement is divided into two different categories like scheduled news and unscheduled news (paragraph-3.4.1 and 3.4.2). To analyze the impact of the scheduled and unscheduled news in the dummy variable will be created. the dates when scheduled news will be announced it will mark 1 and the rest dates are 0 and same unscheduled news when the unscheduled news are declared it will mark 1 and rest of the dates are 0. And in the second steps, the scheduled news are again divided into some categories like global news, national news, etc. and followed the same methods of the dummy. For understanding the investor sentiment, in the context of news announcement, methodology followed by (Suleman, 2012), (Rangel, 2011), (Uygur & Taş, 2014), (Yang & Copeland, 2014), (Lee et al., 2002), (Weber et al., 2012), (Bandopadhyaya & Jones, 2016), (Alanyali et al., 2013), (Baker & Wurgler, 2006) and (Mian & Sankaraguruswamy, 2012) will be adopted.

To evaluate the sentiment of the investor, a composite sentiment index will be made followed by (Baker & Wurgler, 2006) based on several proxies of the investment. These sentiment proxies are BSE turnover, closed-end fund, no of IPOs, the value of IPOs, FOREX reserve, foreign capital inflow, mutual fund, put call ratio, the volatility index, corporate bond return, total share of debt and equity issues, and dividend premium. But

in the Indian context, some data are not available so that some proxies are removed for making sentiment index and hear the methodology developed by (Chandra & Thenmozhi,2013) will follow. They followed the methodology of (Baker & Wurgler, 2006) and takes TVM, IBS, PCR, NIPO, VIPO, DP, FOREX, NET FII, CDT and nifty future. Here principal component index method / orthogonal analysis method will have followed to make a composite index of investor sentiment through Eviews.

3.3: Model framework

Figure-2 model framework



Here the news announcement taken as a moderating variable because it will connect, linked and affect both investors sentiment as well as the stock performance and stock return. News announcement taken as the independent variable, stock return, and investor sentiment is the dependent variable. On based upon this model four concept will be developed.

- Investor sentiment with stock return.
- News announcement with stock return.
- Investor sentiment with news announcement
- News announcement with investor sentiment and stock return.

3.4: Macroeconomic News:

On the financial markets, macroeconomic announcements are often covered by movements of the portfolio in the stock market. Hops in exchange for flow exchange also around the arrival of macroeconomic fundamentals recommend that these announcements contain news that is relevant for the portfolio investor. The theory provides a solid macroeconomic situation to perceive the news as the risk, so for that investors command a reward in addition to the reward for the traditional risk factors. Peter et.al., (2013).

Macroeconomics will be those extensions for economics that investigations how individuals, households, organizations, and industry take the decision to grant the limited resources. Typically, Typically, in markets where good or services are being brought and sold and it is otherwise known as the performance of an economy. It focuses on the aggregate changes in the economy such as interest rate, unemployment, fluctuations, growth rate, performance, gross domestic product, economy, and inflation. Macroeconomics analyzes all aggregate indicators and the microeconomic factors that affect the economy. Government and business houses are using macroeconomic models to assist in the development of economic policies and strategies.

Microeconomics has been referred to as a "the bottom-up view of the economy", or "how people deal with, time, money and resources." One of the objectives of microeconomics is to analyze market mechanisms that adapt relative cost of goods and services and the allocation of scarce resources among many other uses. It also analyzes market failure, where markets do not produce and describe the theoretical conditions necessary requirement for the perfect competition.

Whereas Macroeconomic news is the news relating to the RBI interest rate for commercial and noncommercial banks, unemployment, market fluctuations, forward-looking fundamentals, growth rate, output and housing, consumer confidence, gross domestic product of nation, economy, and inflation. Here the macroeconomic news is divided into two parts, like Scheduled News and Unscheduled News.

To investigate the effect of macroeconomic news announcements on stock return and sentiment, without controlling the news for quality, regression analysis is applied. The regression model assumes the following form:

$$\Delta m_{j,t} = \alpha_0 + \sum_{k=1}^{K} \beta_k D_{k,t} + \varepsilon_t$$

where Δmj,t is the jth differenced implied moment estimate, i.e. volatility, skewness or kurtosis, Dk,t is a dummy variable to identify days on which an announcement k is released.

3.4.1: Scheduled news

Scheduled news is defined as news events that have pre-programmed publication hours with a fixed date that is known to the public beforehand. This includes economic data such as interest rate announcements by government & private bodies, that are published regularly (for example, budget news, product news, conference calls, company profits announcements, mergers, and acquisitions, etc.).

3.4.2: Unscheduled news

The unscheduled news is defined as news events that you know are coming, but you do not know exactly when to expect details that will affect market prices. Unscheduled "as random news events (for example, demonetization, profit orientation, acquisition announcement, kidnapped executive, etc.). Unscheduled news that represents the majority of news events appearing on news screens every day. Unscheduled describes something that is not planned.

The macroeconomic news announcement will be collected from different sources like google news & google trends, returs news, economic times, business standard electronic version of newspapers from 1st Jan 2013 to 31st Dec 2016. First of all, the macroeconomic news announcement is collected and then it will be divided into two different categories like scheduled news and unscheduled news and again the same news will be categorized into national news and global news. In schedule news categories the news events like Interest rate reports, speeches of senior officials of the government or any other public agencies like chairman, ministers, or governor of RBI etc., Macroeconomic figures of the nation, Import prices, Current account deficit, Gross domestic product, Non-farm productivity, Housing completions, Business inventories, Employment report, Wholesales, Consumer price index (CPI), Consumer confidence index, Producer price index (PPI), Monetary policy news, Budget news, Inflation news etc. The second broad categories are unscheduled news announcement. This category is made up the forecast of key international institution like IMF, the World Bank and other international bodies., natural disasters, wars, terrorist attacks, etc., Analysist

recommendation, press announcement based on some economic issue, Natural Disasters, wars, terrorist attacks, etc., rumors of central bank etc. are coming under unscheduled news announcement. Table -2 gives the details of the news announcement and the category of the news with the reference.

TABLE- 2 Categories of News Event:

News Event	Categories	Reference
Interest rate reports	Scheduled news	(Bauwens et al. 2005), Nikkinen & Sahlström, (2004), Kurov, (2010), Ederington & Lee, (1993), Nikkinen & Sahlström. (2004), (Bauwens et al. 2005), (Lin,2013), (Jiang et al., 2012).
Speeches of senior officials of the government and of public agencies.		
Macroeconomic figures of country.		
Import prices		
Current account deficit		
Personal income, Real earnings, House sales, Car sales		
Gross domestic product(GDP)		
Non-farm productivity		
Construction spending, Business inventories, Housing completions		
Employment report		
Whole sales Price		
Consumer price index (CPI)		
Consumer confidence index		
Producer price index (PPI)		
Monetary policy news, Budget news, Inflation news		
Forecasts made by economic institutes	Unscheduled news	
Declarations of OPEC members		
Rumors of central bank interventions		
Extraordinary events		
International announcement		

IMF, the World Bank, and the IFO institute announcement		
Analysist recommendation		
Press announcement		
Natural Disasters, wars, terrorist attacks, etc.		

Sources- previous literature

3.5: TOOLS AND TECHNIQUE USED IN THIS STUDY

3.5.1: Portfolio Return

Portfolio Return is a stock return experienced by the holder of the stock. A portfolio is a group of financial assets like stock, bonds, mutual fund etc. it refers to the return of selected growth with the growth option schemes. It is calculated on the net annual value on a daily, weekly or a long-term basis. Capital appreciation and the dividend are the main components of the portfolio returns.

$$Rp = \frac{NAVt - NAVt\text{-}1}{NAVt\text{-}1}$$

Where:

Rp = return of the portfolio

't' = time

NAVt =current day closing price

NAVt-1= previous day closing price

3.5.2: Risk-free return (Rf)

It is the rate of return which is associated with zero risks to an investment like govt treasure bill and bank deposited. Here RBI 91-days' treasure bill is treated as the risk-free return and the current risk-free rate is 6.15%.

3.5.3: Unsystematic risk

The Unsystematic risk, also known as "diversifiable risk" "specific risk," or "residual risk,". It represents the portion of the risk of the investment that can be excluded by holding an ample number of the stock portfolio. It can be reduced through

diversification of the portfolio. It can be calculated as follows.

$$\text{Unsystematic Risk} = (\sigma_p^2) - (\beta^2 \times \sigma_m^2)$$

Where:

σp = Standard Deviation of the portfolio

σm = Standard Deviation of the Market

3.5.4: Systematic risk:

Systematic risk is also known as non-diversifiable risk or market risk that means risk associate with the market return. It could be the microeconomic factor like currency fluctuations, inflation, interest rate changes etc. these factors are directly affected the market volatility. it cannot be controllable and can be somewhat reduced by asset allocation. Systematic risk can be calculated as follows.

$$\textbf{Systematic risk} = \boldsymbol{\beta^2 \times \sigma p^2}$$

3.5.5: Coefficient of Correlation (r);

The coefficient of correlation is a measure to measuring the relationship between the portfolio return and scheme return for a given period. The movement of the performance of the portfolio and the scheme performance is studied with help of simple linear regression analysis by using:

$$r = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \times \Sigma y^2}}$$

Where: x = $X - \bar{X}$ and y= $Y - \bar{Y}$

3.5.6: Beta:

It reflects how the market volatility of an investment response to market fluctuation. It measures the risk of a portfolio (systematic risk) in comparison to the market. It is used in CAPM model to estimate the expected return of the stock and the market return. The Capita asset pricing model is applied to compute the beta(β) from the following formula:

$$\textbf{Ri} = \boldsymbol{\alpha + \beta}\ \textbf{Rm} + \textbf{et}$$

3.5.7: Autocorrelation Coefficient:

It is a mathematical representation of the association within the chronological sequence of observations of net assets value of the time series data to verify whether the present

closing value is based on the past closing value. In the case of time series data, the series always shows a stochastic trend. The previous day's closing price always affected the current day closing price.it is calculated by using this formula.

$$r_k = \frac{\sum_{i=1}^{n-k} (y_i - \overline{Y})(y_{i+k} - \overline{Y})}{\sum_{i=1}^{n} (y_i - \overline{Y})^2}$$

Where:

yi = (Observation in a time sequence.)

y1 = (First or earliest observation)

rk = (autocorrelation coefficient)

$\overline{Y}$= (mean value of variable)

3.5.8: Sharpe ratio

It was developed by William F. Sharpe in 1966. It is mostly used to measuring the risk-adjusted return. The ratio can be imprecise when it is applied portfolio that doesn't have the normal distribution. This ratio calculated the excess return per unit of the total risk of the stock portfolio. It uses standard deviation (σ) to a measure fund risk-adjusted return. It does not consider that the portfolio is diversified. This ratio is the average return earned more than the total risk-free rate per unit of volatility. it is also called as the reward to volatility ratio. Higher Sharpe ratio is preferable. that indicates that highest return per unit of total risk. The Sharpe ratio can be negative because of the excess return is the return on the portfolio is the less risk-free rate. So, the Sharpe ratio can be calculated as follows.

Sharpe ratio = (portfolio return − Risk-free rate)/Standard deviation of the portfolio

Symbolically:

$$\text{Sharpe ratio} = \frac{R_p - R_F}{\sigma_p}$$

Where: Rp - portfolio return

Rf - risk free rate i.e. 91 days' government treasure bill rate and

σp - standard deviation of the portfolio.

3.5.9: Treynor ratio:

Like Sharpe ratio, the Treynor ratio is also another measure of risk-adjusted return. However, in the case of Sharpe ratio, it measures the only excess return of the

investment over the risk-free return of total risk, but where as in the case of Treynor ratio it determines the excess return per unit of systematic portfolio risk on connection to the market beta (β). This measure was developed by "Jack L Treynor" and it is also called as Treynor measure or reward to volatility ratio. The high positive ratio indicates that the investment has in relation to market risk and negative ratio shows that the performance of the investment is worse as the comparison to the risk-free instruments. Finally, it can be said that the Treynor ratio is an effective performance metric that measures effective risk-adjusted return for risk. It is calculated by the following formula.

$$\text{Treynor ratio} = \frac{R_p - R_F}{\beta_p}$$

Where:

Rp- average return of the investment, Rf- risk free return (91 days treasury bill of RBI), βp- beta of the investment.

3.5.10: Jensen's α.

Such as Sharpe and Treynor ratio, Jensen alpha will be an additional measure to determining excess return of the stock portfolio over its required exchange based on CAPM model. This measure was developed by Michael C. Jensen it is also known as alpha. Alpha is dictated Toward those qualities of the organization in stock portfolios clinched alongside association of the beta, which measures the stock return to its volatility. it can be zero, positive and negative also. Higher alpha is normally preferable because of it shows portfolio perform better and lower alpha indicates that the portfolio is underperforming in the market. It is basically used to measuring the abnormal return of the stock portfolio over the required market return. The market return is predicted through CAPM model. Jensen alpha can be calculated as follows.

Jensen's alpha = Portfolio Return (Rp) − [Risk Free Rate (Rf) + Portfolio Beta(βp) * (Market Return (Rm) − Risk Free Rate (Rf))]

3.5.11: Information ratio.

It is another performance measure like Sharpe ratio to assessment the performance of the portfolio. it is a risk-reward benchmark that's used to measuring the performance of the stock portfolios (especially the effectiveness of the fund manager). A Higher ratio shows a better-managed fund with stock pricing and vice versa. The ratio is valid when the fund return and its benchmark are highly correlated. The information ratio as also known as the appraisal ratio. This can be calculated as follows.

Information ratio = $\frac{E[Rp-R_B]}{\sigma}$ $= \frac{\sigma p}{\sigma ep}$

where: αp = Jensen's α or abnormal return of the portfolio; and

σep, = unsystematic risk of the portfolio.

3.5.12: Fama decomposition measures:

Euguene fama in 1972 developed a new methodology for measuring the performance of the stock portfolios. It is an analytical framework, that empowers for a detailed analysis of the portfolio performance known as fama decomposition measure of total portfolio return. total portfolio return consists excess return and risk-free rate. In terms of Fama's framework, the excess return of portfolios constitutes the three main components:

(1) return for non-diversification (systematic risk R1)

systematic risk =βp (Rm-Rf)

(2) return for diversification (unsystematic risk R2)

unsystematic risk= [(σp / σm) - βp] × (Rm – Rf)

(3) Net selectivity (R3):

The return from net selectivity (R3) is the difference between the actual return and the sum of the other three components. The net selectivity is the extra return achieved by a fund manager for his ability to the selection of preferable stock over and above the return assigned by the portfolios total risk.

Net Selectivity = Rp – [Rf + (σp / σm) × (Rm – Rf)]

However, the total return of a portfolio can be calculated by taking four components in to consideration.

Total return on Portfolio = Risk-Free return (Rf) + Systematic risk (R1) + Unsystematic risk (R2) + net Selectivity (R3).

Selectivity is the components of the excess return that is not measured by the beta portfolio and the risk premium. It includes the net selectivity and diversification. A positive net selectivity shows that the portfolio gives a better performance and vice versa.

3.5.13: t-Test.

The t-test is used to compare the returns of socially responsible stocks portfolios and general stocks portfolios. In this test, I compare the returns for the whole period 2013-2016 as well as the individual period:

the formula using calculating t-test is;= $$\frac{\overline{x_1}-\bar{x}_2}{\sqrt{\frac{s_I^2}{n_I}+\frac{s_2^2}{n_2}}}$$

3.6: Variables Taken for Measuring the Investor Sentiment

In my studies, I followed the methodology developed by Baker & Wrugler, (2006, 2007), Yuan (2012) and Chandra & Thenmozhi, (2013). Due to some unavailable of the data in Bombay Stock exchange I have left some proxies. and make a sentiment composite index based on available data in BSE website because my studies are based on Bombay stock exchange only. I have taken turnover-to-volatility multiple (TVM), the number of initial public offerings (NIPO), and value of initial public offerings (VIPO), corporate debt turnover, forex, mutual fund data, trading volume of put & call, foreign capital inflow, BSE turnover, BSE volatility index, total turnover of option ad future and sustainability index like BSE GREENEX, and CARBONEX and non-sustainability index like BSE LARGE-CAP. To make a composite sentiment index I have taken, at first, I extracted data from BSE website and then decompose it into rational components and non-rational distinctive component by using principal component index through EVIEWS. It will be organized around the following model:

$E_{t-1}[R_{it}] = \alpha + b1\,'\mathbf{X}_{it-1} + b2\,'T_{t-1}\,X_{it-1}$,

where i indexes firms or securities, t is time, X is a vector of firm or security characteristics and T is a time series conditioning variable that proxies for investor sentiment.

3.6.1: Turnover to volatility multiple

The first proxies of the studies to making a composite index are a turnover to volatility multiple. The turnover to multiple ratios as the trading volume of the equity market divided by the standard deviation (σ) of the market return. Though it is a less widely used measure that indicates market liquidity in the context of price fluctuations and estimates the relationship between liquidity and fundamental market profitability (Samarakoon,1999) and (Benic & Franic,2008). High turnover to volatility intimates that the market is with relatively high level of liquidity.

3.6.2: No of IPO issue and value of IPO issue:

The next proxies of my model are initial public offering. No of IPO defined the total no od IPO issued and value of IPO defined the total value of the IPO issued sample period. according to the Baker & Wrugler, (2007) and Yuan, (2012), the long-term shareholder and the insider have strong inducements in the equity market. A high value suggests that the market is the bullish and low value of the IPO suggest that the market is bearish. The investor sentiment hypothesis suggests that these IPO should be more prevalent in time when the individual investor is optimistic, so the stocks will fetch prices relative to their fundamentals value (Lee et al., 1991).

3.6.3: Forex Reserve

It is observed that when there is a volatility in the foreign currency or the level of the forex reserve of the economy and it is the subsequent impact on the domestic currency i.e. INR and significantly influence the sentiment of the investor. when the INR has come under pressure and the worst performing Asian currency since that's why the Global Investors diversified their investment to emerging economies to maximize return from rising US bond prices after the Federal Reserve announced the partial withdrawal of their quantitative easing program. That's way we can say that the foreign currency will affect the investor sentiment. The high foreign currency has the positive relationship with investor sentiment and vice versa. Positive and higher the foreign currency reserve lesser the pressure of the domestic currency.

3.6.4: Foreign Capital Inflows

Foreign capital inflow is an important proxy of the investor sentiment which indicates the foreign institutional investor sentiment and behavior on the economy and market. High inflow means positive sentiment and low inflow means negative impacts. for

getting this data I have extracted monthly foreign capital inflow in India from BSE website and then the monthly data will be converted to day wise data by using linear match frequency conversion function of Eviews and simultaneous it will be converted into rupees by taking RBI daily DOLLAR to INR value.

3.6.5: Turnover in BSE Index Futures

The next proxies are turnover in BSE index features. In futures investor gauge, what will be the market performance of the open and over the trading day? Higher trading in the index futures before market open means that the actual proxies index will trade up in the early part of the day. in this variable, I assumed that the higher trading in future indicates bullish market and vice versa.

3.6.6: Corporate debt turn over

Indian equity stock market is very strong whenever we talk about debt market in India is in the initial stage and the leg has clearly lagged other emerging economies in developing its long-term debt market. the equity market is always in the focuses or centered of the investors and media attention. Initially, the company depends upon the traditional sources of financing like external borrowings, equity market, and bank finance etc. But the scenario is changed now the corporate debt market is quite active. Rather the debt market is depending upon the other factors and so on the corporate debt turnover reflect the sentiment of the investor and their confidence in Indian economy. In this study, I used daily corporate debt turnover data from Bombay stock exchange(BSE). In this variable, my assumption is that when the debt turnover increase it reflects positive participant's expectation on the debt market. Hence, we can say that it is positively associated with the sentiment of the investor.

3.6.7: Volatility index

For studying the market volatility and return movement I employed volatility index as a measure of price volatility in the market. The volatility index extracted from BSE website on daily basis. This index measures the market expectation of volatility over the near term and it is considered as the fear gauge and it has the negative relation with the market. according to (whaley, 2009), this indicator can be used to predict the stock market returns. So finally, I have used BSE volatility index for this study to be measuring the return movement in the stock market.

3.6.8: Total turnover

In this study, I have used daily total turnover of the BSE because it includes all the aspects and all stocks, equity, debt option, and futures. The causes and consequences of the increase in total turnover have a significant impact from the point of view of investors and regulators. High trading means high-level trading interest among the investor and vice versa (Baker & wrugler,2006). That's why I assumed the turnover volatility will also be affected investor sentiment in share market. The daily data collected from Bombay stock exchange.

3.6.9: Mutual Fund

In the mutual fund, it polls the fund from different investor and invests it in a successful venture. by investing in the mutual fund, it could have diversified the investor risk to invest their money in numerous securities. So, the mutual fund is directly associated with the investor and sentiment of the investor. According to the (Elton et al., 2004), mutual fund returns are closely associated with the fund families which reduce the benefits of the investor diversification.

3.6.10: GREENEX

On the mid of the February 2012 BSE launched the BSE GREENEX index a new stock index of sustainable stocks in collaboration with the India's leading management institute the Indian institute of management Ahmadabad and g-trade carbon ex-ratting services private limited. The top-ranked companies from of each sector like steel industry sector, power sector, banking sector, cement industry, pharma industry, etc. have reached with a new index called BSE-GREENEX. On the starting of this index it takes to 20 green companies from BSE 100, and later it takes top 25 green companies from BSE 100 which meet energy efficiency norms, allowing interest to the investors to deceive benefits from the related cost saving, market cap, and liquidity.in this study BSE GREENEX as taken as proxies of sustainable stock index.

3.6.11: BSE put call ratio

The put-call ratio is an indicator specifically designed for individual investors gauge the general sentiment of the market and it provides information on the trading volume of put options to call options. This ratio will be the widely accepted ratio for investor sentiment in the stock market. Technical experts and traders have used this ratio as an indicator of measuring the performance and as a barometer of market sentiment. The

ratio is calculated by dividing the number of traded put options by the number of traded call options. The current study followed the BSE-related data. But due to the unavailable of data in BSE website, it will not be included in making a sentiment index. The data are available but there is the huge gap between data series till April 2016 onwards the data are not available.

3.6.12: CARBONEX

On 30th September 2010in collaboration with the government of UK, BSE launched a new index called BSE CARBONEX. S&P BSE CARBONEX index which is the first carbon-based thematic index of the country. BSE CARBONEX which will provide a strategic viewpoint of organizational commitment to mitigating climate change. This index is specially introduced to provide a measure and increase awareness of the dangers posed by climate change. CARBONEX will allow investors to evaluate the effectiveness of the companies constituting the BSE-100 index in terms of their commitment to reduce the greenhouse gas emissions. Components of BSE CARBONEX ended or underweighted compared to the benchmark on the basis of their performance in the evaluation process. The evaluation will be based on the carbon emission and the carbon efficiency of the companies. The index will encourage people and the investor to invest in companies that perform well on the index thus promoting low carbon growth. To show the impact of sustainable stock on investor sentiment when macroeconomic news announcement is made. BSE CARBONEX is taken as another proxy of the sustainable index.

3.6.13: BSE Large Cap

The Large cap applies to those company have more than 5 billion US dollars' worth of market capitalization. Large cap means large market capitalization. it is calculated multiplying the stock price per share into a number of outstanding shares of the company. BSE large cap represents the top ranked 70% of the total market capitalization of the BSE all cap. particularly this index was developed to represent the large capital segment company in Indian stock market. The listed companies of this index were well established and strong market presence. Generally, investors are considered as safe investment companies. To show the impact of sustainable stock as compare to the non-sustainable stock portfolio on investor sentiment when macroeconomic news announcement is made. BSE CARBONEX is taken as another proxy of the non-sustainable index.

3.7: Panel Regression Model

The analysis of the time series data as well as cross-sectional data (panel data) is one of the most active and innovation in econometric. Because the panel data provides a rich development of estimation technique and theoretical results. In this study, the time series data belongs to stock returns and sentiment index and the news announcement is coming under cross-sectional data. The following regression is applied in this model.

$$y = \beta_0 + x_1\beta_1 + x_2\beta_2 + \ldots + x_k\beta_k + c + u$$

Y= Dependent Variable,

X= Independent Variable,

C = Constant,

U = Error Term,

In literature study, it is found that there are several no of study document a strong link between both in the time-series data and cross-sectional data (Brown & Cliff, 2005), (Baker & Wurgler, 2006) and (Lemmon & Portniaguina, 2006). In this study, it was estimated in predictive regressions of the form by the following equation.

$$\mathbf{R_{t+1} = \alpha + \beta(sentiment) + E_t}$$

Where:

rt+1 = Return of the individual stock index.

Sentiment = It is a proxy index of investor sentiment based on several variables.

Et = Error Term

3.8: Augmented Dickey-Fuller Test

The stationarity of data has been checked by using Augmented Dickey Fuller Unit-Root Test. The **Augmented Dickey–Fuller test** is the extension of the **Dickey–Fuller test. Augmented Dickey–Fuller test** (**ADF**) tests the null hypothesis of a unit root is present in a time series sample. This test is normally used to analyses or to check the stationarity and trend stationarity of the time series data. The augmented dicky-fuller statistic is used in the test is a negative number. More negative is the stronger rejection of hypothesis at some level of confidence. To testing the stationarity of the series by using this technique through apply this formula.

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \cdots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_t,$$

where : α = constant, β = coefficient on a time trend, p = the lag order of the autoregressive process.

Imposing the constraints $\alpha = 0$ and $\beta=0$ corresponds to modelling a random walk and using the constraint $\beta=0$ corresponds to modeling a random walk with a drift. This test is carried out under the null hypothesis $\Upsilon= 0$, against the alternative hypothesis $\Upsilon< 0$.

Before going to the apply any model in data series it required standardized data. To make data series standardized log applied in all turnover series such as BSE turnover, mutual fund turnover, IPO turnover, no of IPO, foreign capital inflow, forex reserve, close ended fund, etc. Logarithms is one of the most important mathematical toolkits of statistical modeling and analysis of data. To transforming the normal to logarithms data $y_i=\log(x_i)$ formula will be applied.

The value of Y_t throughout the period when plotted will not be smooth; there will be some period when there will be spikes (up and down). To testing of stationarity of variables is to verify whether the effect of shock is permanent or transitory. if the effect of shock is transient (temporary), the value of Yt in subsequent period will return to its long-run equilibrium. If Y_t returns to its long-run equilibrium, we say that the data set is stationary, i.e. meaning that the data is stable even with the effect of shock, Y_t still goes back to its long-run mean (mean reverting). However, if after the shock, the subsequent Y_t does not go back to its long-run equilibrium, its means that the effect of the shock is absorbed into the system and becomes part of the system. This type of data set is called integrated time series. This is one rationale for checking data stationarity. To convert the stock index to return of GREENEX, CARBONEX, LARGECAP, volatility index, etc. $(Pt-Pt-1)/Pt-1$ will be followed.

CHAPTER-4

DATA ANALYSIS

Objective-1

To study the differences in the performance of SRI and Conventional Stock portfolios performance.

Hypothesis based on objectives

H1. There is no significant difference in the returns of socially responsible stocks portfolios with general stocks portfolios.

H2. There is no significant impact of microeconomic news announcement on stock return.

H3. There is no significant impact of investor sentiment on stock return.

H4. There is no significant impact of investor sentiment on microeconomic news announcement.

H5: There is no significant impact of investor sentiment on stock return and microeconomic news announcement.

4.1: Analysis of the results objective 1

On the basic of the methodology applied in the first objective of this study have been explained in the current section. This section basically focuses on the preliminary

results on risk, return, and performance evaluation of different socially responsible stock like GREENEX, and CARBONEX as comparison to BSE LARGE CAP and BSE SENSEX.

Table -3: correlation of different portfolios

Correlations	Sensex	Large Cap	Greenex	Carbonex
Sensex	1	.997**	.985**	.993**
Large Cap	.997**	1	.992**	.998**
Greenex	.985**	.992**	1	.995**
Carbonex	.993**	.998**	.995**	1

(Sources- Author Compilation & Computation). Note-- **. Correlation is significant at the 0.01 level (2-tailed).

Table-3 shows that the correlation of different socially responsible stocks portfolio, i.e. S&P GREENEX, S&P CARBONEX BSE S&P LARGE CAP. Correlation analysis is used to identify the pairs of interacting elements of the cross-product of two-dimensional time-series data. However computational cost is very high in correlation analysis when the dimension time of time series and the location framework are large. GREENEX and CARBONEX have the lowest degree of correlation with all other portfolios like BSE S&P LARGE CAP, especially with BSE SENSEX. However, as per the MPT of Markowitz says that the inclusion of the socially responsible stock or sustainable stock portfolio can provide diversification benefits to the socially responsible investors and help them to reduce portfolio risk.

Table-4: Monthly return, risk and adjusted measure

Average Return

Portfolios	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	8.95%	5.58%	31.35%	-4.12%	3.01%
BSE GREENEX	9.75%	4.57%	31.09%	0.25%	3.09%
BSE CARBONEX	9.20%	4.97%	31.25%	-3.73%	4.29%

(Sources- Author Compilation & Computation)

Standard Deviation (σ)

SD (σ)	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	0.1521	0.1738	0.1272	0.1581	0.1493
BSE GREENEX	0.1527	0.1752	0.1178	0.1567	0.161

BSE CARBONEX	0.1542	0.1754	0.1295	0.1599	0.1521

(Sources- Author Compilation & Computation)

As per the empirical results of the Return, risk and performance evaluation of the stock portfolios, table -4 shows that the return, risk, and performance of socially responsible or sustainable stocks portfolio Found significantly higher return than that of other conventional stock or general stocks portfolio. GREENEX provided the highest average return of 8.95 percent, CARBONEX provided 9.75 followed by BSE LARGE CAP with 9.20 per cent. However, at the same time, if we look at the coefficient of variation (a relative measure of risk), GREENEX is one of the socially responsible stocks portfolios which have less coefficient that indicates that it is the most opposing portfolio of all portfolios.

Table-5
Coefficient Variance:

Portfolios	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	0.3176	2.4975	0.4510	-5.3236	3.6453
BSE GREENEX	4.4022	2.9120	0.4222	10.5726	3.7021
BSE CARBONEX	-0.0779	2.7367	0.4598	-6.3390	2.8312

(Sources- Author Compilation & Computation)

Table -6
Calculation Beta (β):

Portfolios	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	0.9699	1.0012	1.0178	0.9794	1.007
BSE GREENEX	0.9646	0.9803	0.864	0.9264	1.0703
BSE CARBONEX	1.0326	1.0045	1.0279	0.988	1.0205

(Sources- Author Compilation & Computation)

Generally, Beta is used to measure the relative risk of stock with respect to the market. Higher beta value i.e. greater than 1 suggest that the return of stock intensify the return of the market. Whereas lower beta i.e. less than 1 suggest that stock returns are muted

as the comparison to market return. Here the beta value is higher. Higher beta(β) for sustainability stock of CARBONEX and GREENEX shows that these two portfolios are more sensitive to market conditions than other general stock portfolios like BSE LARGE CAP.

Table -7
Calculation of systematic and unsystematic risk (%):

Systematic Risk (%):

Portfolios	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	**1.28%**	**-1.70%**	19.88%	-10.43%	-2.63%
BSE GREENEX	**1.44%**	**-2.59%**	16.61%	-5.74%	-2.53%
BSE CARBONEX	**1.58%**	**-2.26%**	20.03%	-10.08%	-1.37%

(Sources- Author Compilation & Computation)

Unsystematic Risk (%):

Portfolios	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	**-1.04%**	**1.53%**	-17.30%	9.32%	2.31%
BSE GREENEX	**-0.12%**	**1.91%**	-8.14%	3.74%	2.02%
BSE CARBONEX	**-1.15%**	**1.92%**	-16.48%	8.79%	1.16%

(Sources- Author Compilation & Computation)

TABLE no -7 shows that the result of risk associated with the stock portfolio. Systematic risk is also known as undiversifiable risk or market risk is the uncertainty fundamental to the whole market segment.it consists the fluctuations of stock price on day to day. It's also known as the volatility. As we know that, the Systematic risk is the result of broader macroeconomic factors that's affecting all securities, but the unsystematic risk is due to factors that relate only to safety. The unsystematic risk is equal to zero, very small or close to zero when well-diversified portfolios are concern, When we look at the unsystematic risk of the portfolios in the table, as per the result of the systematic risk and unsystematic risk it was found that SRI portfolios (GREENEX and CARBONEX) had lowest amount of unsystematic risk which implies that these portfolios are well diversified and investors will be less affected by an announcement of government, corporate event or new microeconomic policy, that has a strong impact on company, industry and its investment type. Moreover, the systematic risk or market risk socially responsible stocks portfolios (GREENEX and CARBONEX) show higher

as the comparison to BSE LARGE CAP that implies that it will affect aggregate outcomes such as broad market returns.

During the entire study period of 4 years (2013-2016), SRI stock portfolio performed better as comparison to other stock portfolios in terms of all risk-adjusted measures, i.e. Treynor ratio, Sharpe ratio, Jensen's α and Information ratio. In the past studies of Tripathi & Bhandari, (2014), Hume & Larkin, (2008), Statman, (2005) and Hamilton et al. (1993), also give the same results of their analysis.Table-8 Sharpe Ratio:

Portfolios	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	**0.1528**	-0.1775	1.7828	-0.7467	-0.2476
BSE GREENEX	**0.2427**	-0.2336	1.9037	-0.4745	-0.225
BSE CARBONEX	**0.1653**	-0.2103	1.7442	-0.7132	-0.1594

(Sources- Author Compilation & Computation)

Table -8 gives the views of Sharpe ratio trend in the three different portfolios. Sharpe ratio is the measure for calculating the risk-adjusted return. It is the average return earned more than the risk-free return per unit of total risk. As per the classical finance theory risk and return move in a cycle. Higher risk in Social Responsible investment stock portfolio generated higher returns and thus high-Sharpe ratio, that indicates highest return per unit of total risk. Here the entire period of 4 years Sharpe ratio of GREENEX and CARBONEX is higher than LARGE-CAP. However, in the year of the 2015 and 2016, the Sharpe ratio gives a negative trend because of the excess return is the return on the portfolio is the less risk-free rate. Therefore, when the portfolio return is lower than the risk-free interest rate, then the excess return is negative. So finally, we can say that the both the sustainability index has less risky as the comparison to the LARGE-CAP. GREENEX provided an average return of 0.2427 percent per unit and CARBONEX average monthly return of 0.1653 of total risk as compared to 0.1528 per cent return per unit of total risk provided by BSE LARGE-CAP.

Table -9 Treynor Ratio:

Portfolios	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	**0.0087**	-0.0308	0.2228	-0.1205	-0.0367
BSE GREENEX	**0.0259**	-0.0418	0.2595	-0.0803	-0.0339
BSE CARBONEX	**0.0110**	-0.0367	0.2197	-0.1154	-0.0238

(Sources- Author Compilation & Computation)

Table -9 shows the performance of the Treynor ratio. Treynor's portfolio performance measure is otherwise known as Treynor rewards to volatility ratio is based on the concept of characteristics line. it is interpreted as stating the rewards in relation to portfolios beta risk. Similarly, in the case of Treynor ratio, High-Treynor ratio indicates the highest return per unit of total systematic risk. A good investment always has a high Treynor ratio. The entire period of the study of 4 years BSE GREENEX and BSE CARBONEX average return are 0.0259 and 0.0110 whereas BSE LARGE-CAP has only 0.0087.i.e. overall as the comparison to the LARGE-CAP, GREENEX and CARBONEX have the good average return. If I focus on the individual year, then the results are negative because of the impact of risk-free return.

The difference between two ratios:

The Sharpe and Treynor measure are used to measure the performance of the portfolio. in Sharpe, portfolio measure uses the standard deviation of return as the measuring the risk, whereas the Treynor measure uses beta measuring the risk. A calculated risk by using standard deviation may be hard to quantify. Standard deviation is a statistical tool which refers how much variability exists in the total portfolio.it is fit when the data are the normal distribution and potential gain and losses fall on a bell curve if the risk of the portfolio is unusual then standard deviation cannot give proper results. Beta is always used to compare the market risk to that of other stock portfolios. It is the measure which determines volatility of a stock as the comparison to other stock. It gives a sense of market risk compared to the greater market. In Sharpe portfolio measure, how well portfolios perform as the comparison to the risk-free rate. The purpose of taking risk-free return is by making a significantly greater return on the portfolio for accepting the additional risk inherent in capital investment compared with the risk-free rate of RBI treasury bill. While in the case of Treynor ratio it determines the adjusted risk-adjusted performance of an investment portfolio as compared to the exchange rate of a risk-free return for a risk-free investment.

Table -10 Information Ratio:

Portfolios	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	**0.1412**	-1.4292	0.7529	0.5648	0.6763
BSE GREENEX	**0.2083**	-0.7839	0.1945	1.0477	0.3747

BSE CARBONEX	**0.2505**	-1.1989	0.4970	0.6552	1.0486

(Sources- Author Compilation & Computation)

The information ratios show how much excess return you have earned from the capital investment by taking excess risk relative to a benchmark.in the other words it is nothing but it is only adjusted alpha and it is similar to Sharpe ratio and generally, alpha is the indictor of stock pricing ability of portfolio fund manager. In this ratio, it is used portfolio return instead of risk-free return. Information ratio is the measure of the risk-adjusted return of the portfolio. It measures the ability of fund manager to extract excess return and identify the strength of the investors. High-Information ratio shows that the investor can achieve higher returns more efficiently by taking on additional risk. Here Information ratios are 0.1412 in BSE LARGE-CAP, 0.2083 in BSE GREENEX, and 0.2505 in BSE CARBONEX.

Table- 11 Jensen's α :

Portfolios	2013-2016	2013	2014	2015	2016
BSE LARGE CAP	**-0.0026**	-0.0138	0.0280	-0.0137	-0.0107
BSE GREENEX	**0.0038**	-0.0150	0.0581	-0.0169	-0.0110
BSE CARBONEX	**-0.0032**	-0.0143	0.0255	-0.0133	-0.0106

(Sources- Author Compilation & Computation)

Jensen's alpha is used to estimating the risk-adjusted performance of a portfolio in relation to the expected market return. This ratio takes volatility of a portfolio and compares its risk-adjusted performance of to a benchmark index. In the case of Jensen's α BSE GREENEX have average return 0.0038 whereas other portfolios like LARGE-CAP and CARBONEX have -0.0026 and -0.0032 respectively. BSE GREENEX has high return as the comparison to another stock portfolio. The Higher alpha value indicates that the performance of the portfolio is better than as the comparison to other portfolio and earning more than the expected level predicted by the market. High-Jensen's α signifies that socially responsible stocks portfolios or sustainable stock indices like GREENEX and CARBONEX are producing highest abnormal returns.

Table-12: Eugene Fama's Decomposition measures results over 4 years:

Fama's Decomposition Measure:

Portfolios	2013	2014	2015	2016
BSE LARGE CAP	**0.0558**	0.3135	-0.0412	0.0301
BSE GREENEX	**0.0457**	0.3109	0.0025	0.0309
BSE CARBONEX	**0.0497**	0.3125	-0.0373	0.0429

(Sources- Author Compilation & Computation)

Fema decomposition measure measures the performance of the portfolio. This index gives the excess return earned by portfolio manager that cannot have been earned by investing in the portfolio. It compares the additional return obtained by the portfolio manager with a specific risk and the additional return that could have been obtained with the same of systematic risk. Here, SR stock portfolios provided a higher return as the comparison to the general stock portfolio. During the total study period, GREENEX provided -0.12 per cent per month and CARBONEX provided -1.15% as compensation for unsystematic risk as against -1.04% per cent in case of BSE LARGE-CAP.

Table- 13 Net Selectivity:

Portfolios	2013	2014	2015	2016
BSE Large Cap	-0.0291	0.2009	-0.107	-0.0338
BSE Greenex	-0.0341	0.1395	-0.0543	-0.0311
BSE Carbonex	-0.0335	0.1903	-0.1011	-0.0221

(Sources- Author Compilation & Computation)

Table -14 Ranking based on net selectivity:

2013-2016	Risk Premium	Systematic Risk	Selectivity	Unsystematic Risk	Net Selectivity	Ranking Based on Net Selectivity
BSE LARGE CAP	0.0102	0.0128	-0.0026	-0.0104	0.0078	2
BSE GREENEX	0.0182	0.0144	0.0038	-0.0012	0.0050	3
BSE CARBONEX	0.0127	0.0158	-0.0031	-0.0115	0.0084	1
2013						
BSE LARGE CAP	-0.0308	-0.0170	-0.0138	1.53%	-0.0291	1
BSE GREENEX	-0.0409	-0.0259	-0.0150	1.91%	-0.0341	3
BSE CARBONEX	-0.0369	-0.0226	-0.0143	1.92%	-0.0335	2
2014						
BSE LARGE CAP	0.2267	0.1988	0.0279	-17.30%	0.2009	2
BSE GREENEX	0.2242	0.1661	0.0581	-8.14%	0.1395	3

BSE CARBONEX	0.2258	0.2003	0.0255	-16.48%	0.1903	1
2015						
BSE LARGE CAP	-0.1181	-0.1043	-0.0138	9.32%	-0.107	3
BSE GREENEX	-0.0743	-0.0574	-0.0169	3.74%	-0.0543	1
BSE CARBONEX	-0.1140	-0.1008	-0.0132	8.79%	-0.1011	2
2016						
BSE LARGE CAP	-0.0370	-0.0263	-0.0107	2.31%	-0.0338	3
BSE GREENEX	-0.0362	-0.0253	-0.0109	2.02%	-0.0311	2
BSE CARBONEX	-0.0242	-0.0137	-0.0105	1.16%	-0.0221	1

(Sources- Author Compilation & Computation)

Table -14 shows that the ranking of the performance stock portfolios based on their net selectivity. Net selectivity is an absolute measure of performance of stock portfolio.it will help the investor to pick the best stock among all stocks. The overall results of the ranking show that the BSE CARBONEX is the best stock portfolio for investment and second the BSE LARGE-CAP and last the BSE GREENEX stock portfolio. And rest all the year the sustainable stocks have better performance as the comparison to non-sustainable stock portfolios.

Overall results:

This is due to the fact that socially responsible or green stock portfolios are less diversified than their common general stock portfolios. This may be due to the reason that majority of socially responsible investment portfolio consist of steel, IT, motor and banking sector. However, the more interesting point to note here that is SRI portfolios (GREENEX AND CARBONEX) provided positive net selectivity returns in the whole period. Thus, GREENEX and CARBONEX indices outperformed BSE LARGE-CAP even on net selectivity basis. The results suggest that the compromise with regard to diversification, this component made by the investing in the socially responsible portfolio, has been well rewarded in terms of higher yields. This also shows that socially responsible companies are outperforming the overall market all the time.

t- Test result:

The results show that the p-value is less than 0.05 in and significant at 1% level (see annexure no-5). so, in both cases Ho is rejected i.e. There is no significant difference in the returns of socially responsible stocks portfolios with general stocks portfolios. And my alternative hypothesis is accepted i.e. there is a significance difference between two sustainability stock portfolio and general stock portfolio.

In the total study period, both the proxies of socially responsible companies, i.e. GREENEX and CARBONEX generated significantly higher return than the proxies of general companies, i.e. BSE LARGE-CAP. Hence, there is absolutely no penalty for investing in socially responsible companies in Indian stock market in the time of financial crises and after financial crises.

OBJECTIVE -2

4.2: Preliminary analysis: Testing unit-roots & autocorrelation

Before going to the regression analysis of the model, a preliminary analysis of testing regular unit-roots and testing of serial correlation is required. For the testing of stationarity, the tests statistics such as Augmented Dickey-Fuller(ADF) is followed (table-15). There is some another alternative test statistic such as Philips-Perron test(PP), Kwiatkowski-Phillips-Schmidt-Shin test (KPSS)and modified Dickey-Fuller t test. The Augmented Dickey-Fuller and the Philips-Perron test are like the Dickey-Fuller test, and it is used to correct for lags. The Augmented Dickey-Fuller test does so by including them the Philips-Perron test does so by adjusting the test statistics. The hypothesis of the Augmented Dickey-Fuller test of unit root indicates that:

Null Hypothesis- H0: The variables have unit root (difference stationary).
Alternative Hypothesis- H1: The variables have no unit root test.
Meaning that the process is either stationary or trend stationary. It will be depending on the version of the Augmented Dickey-Fuller test is used in the series.

4.2.1: OVERALL UNIT ROOT TEST STATISTICS FOR ALL VARIABLES

TABLE – 15

ADF DICKY FULLER TEST FOR STATIONARITY OF INDIVIDUAL VARIABLE													
Variable name	**BSE Turnover**	**Foreign Capital Inflow**	**Close Ended Fund**	**Forex Reserve**	**Future**	**Mutual Fund**	**Value Of IPO**	**No Of IPO**	**Volatility Index**	**Corporate Bond Return**	**GREENEX Return**	**CARBONEX Return**	**LARGE CAP Return**
ADF Test statistics	-4.8736	-3.7346	-3.6035	-9.6398	-30.8167	-20.8775	-4.8736	-2.9137	-6.7250	-24.2727	-28.1554	-28.2119	-28.1570
1% critical value	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368
5% critical value	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643
10% critical value	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683
R-squared	0.3894	0.6113	0.2723	0.2268	0.4927	0.8001	0.3894	0.1763	0.1530	0.4837	0.4477	0.4487	0.4477
Adj R sq.	0.3862	0.6097	0.2678	0.2220	0.4921	0.7986	0.3862	0.1720	0.1504	0.4827	0.4471	0.4481	0.4471
P value	0.0000	0.0038	0.0059	0.0000	0.0000	0.0000	0.0000	0.0441	0.0000	0.0000	0.0000	0.0000	0.0000

(Sources- Author Compilation & Computation)

4.2.3: UNIT ROOT TEST STAT AFTER ADJUSTING SERIAL CO RELATION

Table -16 Result of unit root test after adjusting serial correlation

UNIT ROOT TEST STAT AFTER ADJUSTING SERIAL CO RELATION													
Variable Name	**BSE Turnover**	**Foreign Capital Inflow**	**Close Ended Fund**	**Forex reserve**	**Future**	**Mutual Fund**	**Value Of IPO**	**No Of IPO**	**Volatility Index**	**Corporate Bond Return**	**GREENEX Return**	**CARBONEX Return**	**LARGECAP Return**
ADF Test statistics	-26.5476	-6.4478	-18.1522	-9.6398	-30.8167	-20.8775	-26.5476	-21.5626	-19.0261	-24.2727	-28.1554	-28.2119	-28.1570
1% critical value	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368	-3.4368
5% critical value	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643	-2.8643
10% critical value	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683	-2.5683
R-squared	0.7881	0.2786	0.7327	0.2268	0.4927	0.8001	0.7881	0.6918	0.6662	0.4837	0.4477	0.4487	0.4477
Adj R sq	0.7872	0.2764	0.7308	0.2220	0.4921	0.7986	0.7872	0.6905	0.6644	0.4827	0.4471	0.4481	0.4471
P value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

(The final results of the unit root test after adjusting the serial correlation)

(Sources- Author Compilation & Computation)

UNIT ROOT TEST ANALYSIS:

It is observed that Form the above table no -15 the value of computed t statistics of all variables is negative and significant, which is desired for the run of the model. The t statistics value of the BSE turnover is -4.8736 (with p-value 0.0000), foreign capital inflow -3.7346 (with p-value 0.0038), Close Ended Fund -3.6035 (with p-value 0.0059), Forex Reserve-9.6398 (with p-value 0.0000), Future-30.8167 (with p-value 0.0000), Mutual Fund -20.8775 (with p-value 0.0000), Value Of IPO -4.8736 (with p-value 0.0000), No Of IPO -2.9137 (with p-value 0.0041),Volatility Index -6.7250 (with p-value 0.0000), Corporate Bond Return -24.2727 (with p-value 0.0000),GREENEX Return -28.1554 (with p-value 0.0000), CARBONEX Return -28.2119 (with p-value 0.0000), LARGE-CAP Return -28.1570 (with p-value 0.0000). the results of unit root test show that all the variables of the series are statically significant at 1% and 5% significance level and the Augmented Dickey-Fuller test value is also negative. which is desirable and required to run this model. So, the null hypothesis, the variables have unit root is rejected with 1% and 5% significance level. and the alternative hypothesis the variables have no unit root is accepted meaning that the variable in the series are stationarity. BSE turnover, foreign capital inflow, close ended fund, the value of IPO, no of IPO, volatility index, GREENEX, CARBONEX and LARGE-CAP return are significant at level with intercept and rest all the variables are significant in 1st difference with intercept.

The 1st difference of a series is the series of changes one period to another. If Yt is the value of the series of t period then the 1st difference of Y at period t is equal to Yt-Yt(-1). 1st difference Y is stated as Difference (Y), and Regression It is Y_DIFF1. At the 1ts difference, the data are stationary and not autocorrelated.

Table – 16 shows the results of all variables after adjusting autocorrelation in the 1st difference of some variables such as BSE turnover, forex reserve, foreign capital inflow, mutual fund etc. and the results are significant at 1% significance level and the results shows that there is no positive correlation between variables. and the results suggest that the variables deal with stationary of data (no unit root) but highly determined, time-series progressions.

The objective of the study is to make a sentiment index based on several variables such as BSE turnover, corporate bond return, the value of IPO, no of IPO, volatility index,

foreign capital inflow, forex reserve, BSE future, close ended fund and mutual fund turnover. Before going to apply the principal component analysis to make a sentiment index the group unit root test is required. The test is designed in its general form given by: $\Delta y_{it} = \alpha yit\text{-}1 + \Sigma\beta_{ij}\Delta y_{it}\text{-}j + X_{it}\delta + \nu_{it.}$ and to make a sentiment index- $SENTIMENT_t = \alpha + b'X_t + e_t$.

4.2.4: Panel Unit Root Test:

H0: The group variables have unit root
H1: The group variables have no unit root test

TABLE-17 Panel Unit Root Test:

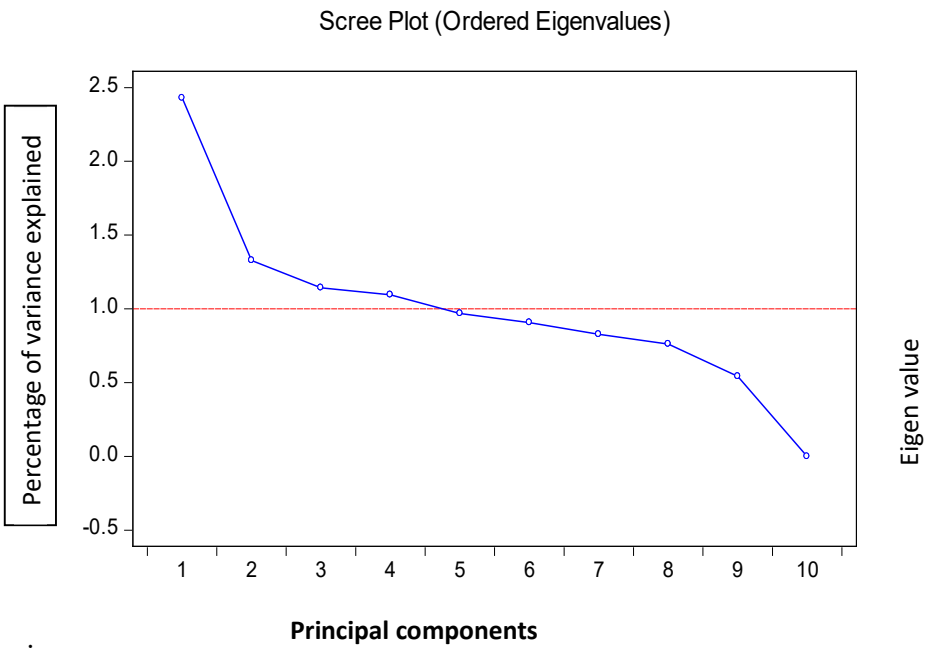
Automatic lag length selection based on SIC: 0 to 6 Newey-West automatic bandwidth selection and Bartlett kernel				
Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-41.8509	0.0000	10	9767
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-68.2342	0.0000	10	9767
ADF - Fisher Chi-square	1588.93	0.0000	10	9767
PP - Fisher Chi-square	665.534	0.0000	10	9800
** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.				

(Sources- Author Compilation & Computation)

The Table No-17 shows the results of the panel root test for investor sentiment index and it simultaneously gives the results of three test such as (Levin, Lin & Chu), (IM, Pesaran and Shin W-stat), (ADF - Fisher Chi-square), and (Philips-Perron - Fisher Chi-square) test and the results indicates that all the test are significant at 1% significance level and the null hypothesis The group variables have unit root is rejected and accept alternative hypothesis The group variables have no unit root test is accepted and on the basis of the hypothesis it can be said that the overall group variable data are stationary and there is no unit root . The automatic lag length selection is based on Schwarz information criterion and the test equation contains individual intercepts.

4.2.5: Principal component analysis:

Figure-3



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The figure shows that the Percentage of variance explained by principal components and eigenvalues. principal components analysis is conducted by 10 different variables and the scree plots show that the 4 factors of the 10-benchmark explained most of the variability because after 4 the factor the factor lines get negative. On the basis of the principal factors, the sentiment index is formed by taking different indicator of indices and returns. The investor sentiment proxies include IPO, FOREX, FOREIGN CAPITAL INFLOW, CORPORATE BOND RETURN, VOLATILITY INDEX, MUTUAL FUND, CLOSE ENDED FUND ETC followed by (Barker & Wrugler,2007) and (Chandra & Kumar, 2012). The aggregate sentiment index will have formed by taking the first principal component of these sentiment proxies and the indicators. The descriptive statistics of the principal component factors (Annexure-6).

4.2.6: MODEL - 1: Do the investor sentiment affects stock return of SRI and conventional stock portfolio

Hypothesis of the model:

H0= There is no significant impact of investor sentiment on stock return of SRI and conventional stock portfolio.

H1= There is a significant impact of investor sentiment on stock return of SRI and conventional stock portfolio.

The model-1 considers whether investor sentiment will affect the stock return. Thus, the following models will be estimated.

Equation based on first model

- CARBONRX RETURN = 0.000384 +(-0.0053014) * sentiment + 0.0077300 ……. Eq-1
- GREENEX RETURN = 0.0004115 + (-0.0050704) * sentiment + 0.0078663 ……..Eq-2
- LARGECAP RETURN = 0.0003714 + (- 0.0051816) * sentiment + 0.0076715 ……. Eq-3

Table no-18

VARIABLES	CARBONEX	GREENEX	LARGECAP
Coef.	-0.005301	-0.00507	-0.005182
Std Er.	0.000213	0.000216	0.000211
T St	-24.94202	-23.44206	-24.56491
R Sq.	0.388547	0.359515	0.381333
Adj. R sq.	0.387923	0.358861	0.380701
AIC	-6.885369	-6.850428	-6.90058
SIC	-6.875403	-6.840462	-6.890613
Durbin. W .Stat	1.762745	1.805417	1.776513
P Value	0.0000	0.0000	0.0000
F Stat P Value	0.000000	0.000000	0.000000

(Sources- Author Compilation & Computation)

Notes: *, **, *** Statistically significant at the 1%, 5% and 10% levels, respectively;

The table no -18 examines the overall results of the investor sentiment and stock returns of the SRI and NON-SRI stock portfolio. For investor sentiment, it will be framed by taking some variable mentioned in chapter -3 and the stock returns will be calculated

on the basis of the closing price of the stock index. The overall regression goodness fit, as measured by the R^2 and adj .R^2 value, indicates the model fit. The Durbin-Watson diagnostic statistic shows that all the independent variables are not positively autocorrelated and there is no serial co-relation. F-statistic (Y = Y + e) is also significant at 5% level. and the probability of each 3 variables is statically significant at 1 and 5% significance level. the null hypothesis There is no significant impact of investor sentiment on the stock return of SRI and conventional stock portfolio is rejected and the alternative hypothesis is accepted There is a significant impact of investor sentiment on the stock return of SRI and conventional stock portfolio. Thus, it is conceded that the change of investor sentiment index is found to have substantial impacts on the stock returns of SRI and conventional stock portfolio and it also concludes that GREENEX stock index will less affect as the comparison to another stock portfolio. The results of the coefficient of all three index will give there is an indirect impact on the change in investor sentiment levels which in turn impacts stock prices. The effect of investor sentiment depends on market conditions and mostly focused on the stock market. Similarly (Li & Zhang, 2008), (Huang et al., 2014), (Baker & Wurgler, 2006), (Huang & Kong., 2007), (Frederick & Adjei., 2017), (Brown & Cliff., 2005), (Kurov. 2010). finds that sentiment and stock returns are negatively correlated with market volatility, that is to say, volatility increases (decreases) when investors become more bearish (bullish). The results in Table-18 and (annexures -7). provide evidence that the effect of investor sentiment on stock returns contributes to the asymmetric reaction of aggregate stock returns to the sentiment of the investors.

4.2.7: Model -2 Do macro-economic news announcement affect investor sentiment

H0- There is no significant impact of news announcement. On investor sentiment.
H1= There is a significant impact of news announcement. On investor sentiment.
The second model considers whether macro-economic news announcement affect the investor sentiment. Thus, the following regression Equation models will be estimated.

Sentiment = (-0.2811989) + 0.6851995 * sc news + 0.4405387 * usc news + 1.1192848…….(Eq-4)

Sentiment = (-0.0396509) + (-0.4345537) * global news + 0.4515345 * national news + 1.1294626…… ..(Eq-5)

Table no-19

VARIABLES	SC NEWS	USC NEWS	GLOBAL NEWS	NATIONAL NEWS
Coef.	0.6852	0.440539	-0.434554	0.451535
Std Er.	0.086315	0.081752	0.09165	0.081186
T St	7.938336	5.388731	-4.741461	5.561741
R Sq.	0.073667		0.056744	
Adj. R sq.	0.071773		0.054815	
AIC	3.06631		3.084414	
SIC	3.08126		3.099364	
Durbin. W .Stat	1.716513		1.74162	
P Value	0.0000000	0.0000000	0.0000000	0.0000000
F Stat	38.88798		29.41703	
F Stat P Value	0.0000000		0.0000000	

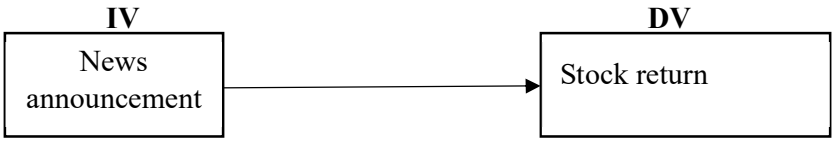
(Sources- Author Compilation & Computation)

Notes: *, **, *** Statistically significant at the 1%, 5% and 10% levels, respectively; SC news – scheduled news and USC news- unscheduled news.

Table 19 shows the impact of news announcement on investor sentiment. The news has a direct impact on the market. It can change a bad day into a good one or a good day into a bad one. The relationship between the news and the market can be highly unpredictable by the best analysts (victor, 2011). To test the hypothesis model -2, estimate a regression Eq. (4 & 5) using change in investor sentiment as the dependent variable followed by (Baker & Wurgler.,2006) and macroeconomic news announcement as an independent variable. Here 1st of all news announcement is divided into 2 categories such as schedule news and unscheduled news and second the same news announcement as divided into the global news and national news. The effect of macroeconomic news announcement on sentiment depends on market conditions. The macroeconomic news announcement may affect investor sentiment through their effects on stock prices. Investor sentiment changes are strongly positively correlated with the aggregate stock returns. (Brown & Cliff, 2005), (Kurov. 2010) find that stock

market valuation errors are positively correlated with investor sentiment. Therefore, the results in Table -19 provide evidence that the effect of Macro-Economic News announcement volatility on investor sentiment contributes an asymmetric reaction of aggregate stock returns in the stock market. Scheduled news and unscheduled news have positively correlated with the market sentiment and only global news has negatively correlated with the stock market. Global news announcement can adversely push stock prices down. The international market is intertwined within the home market. Sometimes, all it takes is a bit of news from overseas to have a down market day. In contrast to previous studies of Nikkinen et al., (2006). Daniel et al., (1998), Akhtar et al., (2012). Mian & Sankaraguruswamy, (2012). Riordan et al., (2013) that overall news announcement affects the stock market basically global news (i.e. news from united states, china, japan, and Europe will highly impact Indian stock market because the most traded currency is the dollar, euro, yen, and pound. When these currencies will have appreciated as the comparison to Indian currency the investor shifted their fund in these country shares.)

Model -3 Do the macro-economic news announcement affect the stock return.



H0- There is no significant impact of news announcement. On stock return of SRI and conventional stock portfolio.

H1= There is a significant impact of news announcement. On stock return of SRI and conventional stock portfolio.

The model-3 considers whether macro-economic news announcement affect the stock return. Thus, the following regression Equation will be estimated based on this model.

PANEL-A

In particularly PANEL -A of the model -3 covers the news announcement like national news and global news announcement in stock returns.

LARGECAP RETURN = -0.0001019 + (-0.0014324)* national news + 0.0043127 * global news + 0.0095724 ……(Eq-6)

CARBONEX RETURN = -5.758e-05 + (-0.0015408) * national news + 0.0043009* global news + 0.0097040 ……(Eq-7)

GREENEX RETURN = 2.124e-05 + (-0.0016468) * national news + 0.0041842 * global news + 0.0096507 …… (Eq-8)

PANEL-B

Whereas PANEL -B of the model-3 covers the news announcement like scheduled news and unscheduled news announcement in stock returns.

GREENEX RETURN = 0.0020949+ (-0.0045819)* sc news + (-0.0024454)* usc news + 0.0096265 …… (Eq-9)

CARBONEX RETURN = 0.0021346 + (-0.0041168)* sc news + (-0.0027764) * usc news + 0.0096975 ……..…(Eq-10)

LARGECAP RETURN = 0.0016212+ (-0.0041126)* sc news + (-0.0012342)* usc news + 0.0096061 ……..……(Eq- 11)

From the Table, no -20 provides the result of news announcement and stock return and it is clearly identifying that news announcement have a significant impact on the stock return where in all the cases the p.value < 0.05. So, the null hypothesis of this model for all categorical news announcement is no significant impact of news announcement. On the stock return of SRI and conventional stock portfolio is rejected at 5% significance level and the alternative hypothesis is a significant impact of news announcement. On the stock return of SRI and conventional stock portfolio accepted. In this table, it also finds that there is a positive (negative) contemporaneous relationship between the news announcement and stock returns. The null hypothesis of equality between the absolute value of the coefficients of the news announcement and stock returns are rejected (p = 0.00), revealing that the news announcement has a stronger impact on the stock returns meaning that the volatilities are persistent in the stock return. The coefficients of the news announcement are negative and statistically significant for Schedule news, unscheduled news and national news suggesting that positive shocks generate less volatility in these markets, than negative shocks, as one would expect and vice versa in global news. Most of the result of my studies are consistent with the previous studies and a negative correlation between the values of stock prices and the news announcement (Bomfim, 2000), (chan, 2001), (Stankeviciene

& Akelaitis,2014), and (Birz & Lott,2008). the coefficient is negative because Firstly, the selected sample was relatively small and only one stock market was selected thus the results can't be considered as universally acceptable. Secondly, previous studies lack applicable information to determine the upper and the lower boundaries of stock price ranges. Thirdly, the simple version of the model, designed to evaluate the impact of public announcements on stock prices was used.

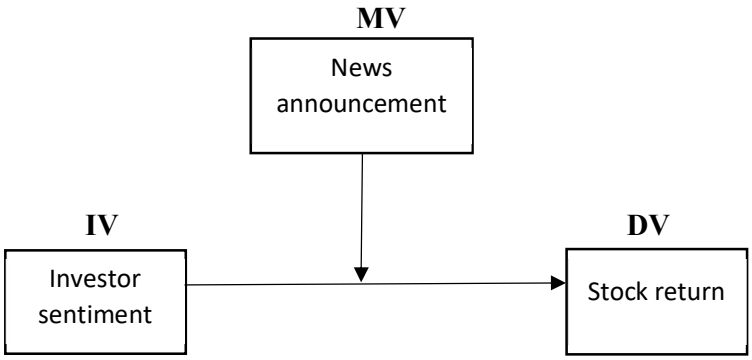
Table No-20

VARIABLES	GREENEX RETURN				CARBONEX RETURN				LARGECAP RETURN			
	SC News	USC News	National News	Global News	SC News	USC News	National News	Global News	SC News	USC News	National News	Global News
COEF.	-0.004582	-0.002445	-0.001647	0.004184	-0.004117	-0.002776	-0.001541	0.004301	-0.004113	-0.001234	-0.001432	0.004313
STD ER.	0.000745	0.000721	0.000699	0.000776	0.00074	0.000707	0.000703	0.00078	0.000741	0.00073	0.000693	0.00077
T. STAT	-6.154276	-3.393964	-2.355685	5.392378	-5.564808	-3.927206	-2.192037	5.512342	-5.550748	-1.690759	-2.065838	5.603461
R. SQ	0.041775		0.036957		0.03866		0.037379		0.030937		0.037737	
ADJ. R. SQ	0.039815		0.034987		0.036694		0.03541		0.028956		0.035769	
AIC.	-6.445532		-6.440516		-6.43084		-6.429508		-6.449779		0.037737	
SIC.	-6.430582		-6.425567		-6.415891		-6.414558		-6.434829		0.035769	
DURBIN W. STAT.	1.797727		1.810042		1.790055		1.809758		1.789972		1.806824	
P. VALUE.	0.0000	0.0007	0.0187	0.0000	0.0000	0.0001	0.0286	0.0000	0.0000	0.0912	0.0391	0.0000
F. STAT.	21.31841		18.76538		19.66508		18.98784		15.61139		19.17693	
F. STAT p. value	0.0000		0.0000		0.0000		0.00000		0.0000		0.0000	

Notes: *, **, *** Statistically significant at the 1%, 5% and 10% levels, respectively;

(Sources- Author Compilation & Computation)

4.2.7: Model-4 Do the investor sentiment affects stock return of SRI and conventional stock portfolio in the context of news announcement.



Hypothesis of the model-2

H0= There is no significant impact of investor sentiment on stock return of SRI and conventional stock portfolio in the context of news announcement.

H1= There is a significant impact of investor sentiment on stock return of SRI and conventional stock portfolio in the context of news announcement.

To investigate the impact of investor sentiment on the stock return of SRI and conventional stock portfolio in the context of Scheduled and Unscheduled news announcement and global and national news announcement is made the following regression equations are made.

PANEL -A news category -1

The PANEL -A, of the model-4, covers the impact of investor sentiment on the stock return of SRI and conventional stock portfolio in the context of Scheduled and Unscheduled news announcement are made. To evaluate the performance of the model, stepwise regression approach followed by Dempsey et al., (2012), Akhtar et al., (2012), Jianmin & Hongzhong, (2002), Bu & Pi, (2014). and Figlewski et al., (2012).

GREENEX RETURN = 0.0010743 + (-0.0050209) * sentiment + (-0.0015803) * (sc news = 0 and usc news = 1) + (-0.0017648) * (sc news = 1 and usc news = 0) + 0.0031136* (sc news = 1 and usc news = 1) + 0.0078076 ……(Eq-12)

CARBONEX RETURN = 0.0008926 + (-0.0052978) * sentiment + (-0.0013277) * (sc news = 0 and usc news = 1) + (-0.0014575) * (sc news = 1 and usc news = 0) + 0.0040787* (sc news = 1 and usc news = 1)+ 0.0076697 .....(Eq-13)

LARGECAP RETURN = 0.0008562 + (-0.0051652) * sentiment + (-0.0012606) * (sc news = 0 and usc news = 1) + (-0.0013836) * (sc news = 1 and usc news = 0) + 0.0036252* (sc news = 1 and usc news = 1) + 0.0076207 .....(Eq-14)

PANEL -B: news category -2

Whereas PANEL -B of the model-4 covers the impact of investor sentiment on stock return of SRI and conventional stock portfolio in the context of national and global macro-economic news announcement are made. To evaluate the performance of the model, stepwise regression approach followed by Dempsey. et.al.,(2012), Akhtar. et.al., (2012), Jianmin. & Hongzhong, (2002), Bu. & Pi. (2014). And Figlewski. et.al.,(2012)

GREENEX RETURN = (-0.0003703) + (-0.0050402)* sentiment + 0.0020255* (national news = 0 and global news = 1) + 0.0015216 * (national news = 1 and global news = 0) + 0.0044868* (national news = 1 and global news = 1) + 0.0078089 .....(Eq-15)

CARBONEX RETURN = (-0.0004539) + (-0.0052999)* sentiment + 0.0019355* (national news = 0 and global news = 1) + 0.0017045* (national news = 1 and global news = 0) + 0.0056958* (national news = 1 and global news = 1) + 0.0076519 .....(Eq-16)

LARGECAP RETURN = (-0.0004992) + (-0.0051783)* sentiment + 0.0020193* (national news = 0 and global news = 1) + 0.0017908* (national news = 1 and global news = 0) + 0.0056834* (national news = 1 and global news = 1) + 0.0075884 .....(Eq-17)

From the table, no-21 and the PANEL-A equation clearly says that the there is an impact of investor sentiment on the stock return when news announcement is made. In panel - a first of all scheduled and unscheduled news announcement are taken. on the particular date when the scheduled news announcement is coming then it will have taken as 1 and rests are 0 and the same for unscheduled news announcement. As per the results when only scheduled news (sc news = 1 and USC news = 0) or only unscheduled news (sc news = 0 and USC news = 1) come then it will affect negatively .that means when

this news comes the stock market get negative response and whenever both news announcement (sc news = 1 and USC news = 1)are taken the stock market positive response with p-value < 0.05.that indicates that the null hypothesis there is no significant impact of investor sentiment on the stock return of SRI and conventional stock portfolio in the context of news announcement is rejected rather accepting the alternative hypothesis. The model is performing well, the maximum, Durbin-Watson value and R.sq. value likelihood confirms the quality of the overall fit of the model. The impact investor sentiment on the stock return is same for all stock portfolio because in this study the proxies of the SRI and NON-SRI stock portfolio coming under one roof called BSE and the news sample is low that may make some problems to create negative coefficient. The coefficients of the news announcement are negative and statistically significant for all stock return so it can be said that negative news announcement will affect the sentiment negatively and positive news announcement will affect the sentiment positively. In contrast to the past studies of (Bomfim, 2000), (chan, 2001), (Stankeviciene & Akelaitis, 2014), and (Birz & Lott, 2008) support to my study.

Whereas the Table -22 Panel-B News Category -2 impacts of investor sentiment on the stock return of SRI and conventional stock portfolio in the context of national and global macroeconomic news announcement are made shows that sentiment is always negatively associated with the stock return. So, it can be said that negative sentiment will affect more as the comparison to positive sentiment. It can also be said that when negative sentiment comes the market falling. (Schmeling,2009). (Baker & Wurgler, 2006, 2007). (Kim et al., 2017), Dempsey et al., 2012), Akhtar et al., (2012), Jianmin.& Hongzhong, (2002), Bu & Pi, (2014). and Figlewski et al., 2012). When we talk about the second category of the news announcement the national and global news announcement the both news announcement has the significant effect on the sentiment as well as the stock returns. The global news announcement has more positive impact on the stock return and national news has lesser positive impact on the sentiment as well as the stock return as the comparison to the global news. In this model 3 sub model will framed like National=0, global=1, national=1, global=0, and national=1, global=1. In the first case I have taken the global news announcement date is 1 and others are 0, second only national news announcement date are taken as 1 and rest are 0 and in the

third case, both national and global news announcement are taken. In all three cases, the stock returns are positively correlated with the news announcement with the p value < 0.05. indicates that the null hypothesis is rejected and the alternative hypothesis is accepted and the model is performing well, the maximum, Durbin-Watson value and R.sq. value likelihood confirms the quality of the overall fit of the model (see annexures- 8).

PANEL-A - News category -1: SC News and USC News

Table no-21

VARIABLES	LARGECAP				GREENEX				CARBONEX			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
SENT	-0.005165	0.000218	-23.73322	0.0000	-0.005021	0.000223	-22.48405	0.0000	-0.005298	0.000219	-24.15046	0.0000
SC=0, USC=1	-0.001261	0.0006	-2.10145	0.0359	-0.00158	0.000615	-2.571279	0.0103	-0.001328	0.000604	-2.19908	0.0281
SC=1, USC=0	-0.001384	0.00065	-2.129521	0.0335	-0.001765	0.000664	-2.657641	0.008	-0.001457	0.000652	-2.234228	0.0257
SC=1, USC=1	0.003625	0.00146	2.483695	0.0132	0.003114	0.001523	2.044241	0.0412	0.004079	0.001496	2.725992	0.0065
R-sq.	0.391364				0.370965				0.399901			
Adj R-sq.	0.38887				0.368387				0.397442			
Akaike info criterion	-6.910811				-6.862351				-6.897997			
Schwarz criterion	-6.885895				-6.837434				-6.87308			
Durbin-Watson stat	1.78718				1.821211				1.776235			

(Sources- Author Compilation & Computation)

Notes: Statistically significant at the 1%, 5% and 10% levels, respectively. SC- scheduled news, USC – unscheduled news .

PANEL-B - News category -2: national news and global news.

Table- 22:

variables	CARBONEX				GREENEX				LARGECAP			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
SENT	-0.0053	0.000219	-24.23601	0.0000	-0.00504	0.000223	-22.58502	0.0000	-0.005178	0.000217	-23.87831	0.0000
NATIONAL=0, GLOBAL=1	0.001936	0.000697	2.775909	0.0056	0.002025	0.000712	2.846456	0.0045	0.002019	0.000691	2.920195	0.0036
NATIONAL=1, GLOBAL=0	0.001705	0.000614	2.776202	0.0056	0.001522	0.000627	2.428533	0.0153	0.001791	0.000609	2.941107	0.0033
NATIONAL=1, GLOBAL=1	0.005696	0.001566	3.636157	0.0003	0.004487	0.001599	2.806707	0.0051	0.005683	0.001553	3.658576	0.0003
R-sq	0.402686				0.370755				0.396508			
Adj R-sq	0.400238				0.368177				0.394035			
Akaike info criterion	-6.902648				-6.862017				-6.919298			
Schwarz criterion	-6.877732				-6.837101				-6.894382			
Durbin-Watson stat	1.760282				1.805028				1.772108			

(Sources- Author Compilation & Computation)

Notes: Statistically significant at the 1%, 5% and 10% levels, respectively;

CHAPTER 5

5: Findings and Conclusion

5.1: Findings

Past studies have found that socially responsible investment perform well in both before financial crises and after financial crises. But my studies find that at the time of neutral market condition different business and macroeconomic condition it also performs better as the comparison to another non-SRI stock portfolio.so we can say that it is a boon for every investor in all period. The findings of the studies will support to the companies, retail investor, broker, policy maker, regulator, and mutual fund. Due to this, the company will change their attitude, practice, and agenda to move towards social responsibility and make some investment in ESG factors for the benefits of the society. Due to the significant higher return of the socially responsible portfolios as the comparison to other stock portfolios, investors are changing their mind and invest their money in socially responsible companies.

The second goal of the study is to examine how investor sentiment impacts the stock price of SRI and Conventional Stock portfolios when macroeconomic news announcements are made. The findings are presented in four parts. For this study, the daily data from 2013 to 2016 to construct the investor sentiment index and the results indicate that the investor sentiment index serves as an effective contrarian predictor of stock returns.

First of all, in classical finance theory, investor sentiment does not play any role cross-section of stock prices, realized returns, or expected returns but my results tend to the sentiment of the investor have the significant role in the cross-section of the stock returns.

Second, the News announcement is something that affects stock prices/ returns. There may be positive news, negative news or news to which market may not react at all stock returns on the day of the macroeconomic announcements are significantly affected It may positive due to positive announcement and negative with negative announcement and it is also found out that News which is considered as positive tends to have a positive effect on stock markets and one can see share prices rising soon after the news come out in the open.

One more thing I have noted that in some cases scheduled news does not always translate to jump in stock price up. in fact, often the scheduled news will produce a slightly /down drop in a stock price. Because of the rumors and unofficial news having more impact on stock price.

Third the news announcement and the sentiment it is found that when the sentiment is positive the stock market gives upward trend and when the sentiment is negative it will affect the stock market down.

Fourth when the news announcement is coming it may be scheduled and unscheduled or global and national. The news announcement is directly affected the investor sentiment index and again the sentiment will affect the stock returns. It is also found that the sentiment is negatively correlated with the market volatility; that is, volatility increases (decreases) when investors become more bearish (bullish).

5.2: Conclusion

The first objective gives broad ideas whether socially responsible companies are performing well in Indian stock market in terms of letter price and return especially in different business and macroeconomic condition. SRI investment is a new era of investment or the new stage of investment since one decade. It requires investors to make their investment planning not only for the reviewing financial performance of the company or growth of the company but also reviewing company investment in ESG issues.

The performance of the SRI stock portfolios like GREENEX and CARBONEX with the comparison to the large-cap have been analyzed by using different risk adjustment technique like Sharpe ratio, Treynor ratio, Jensen alpha measure, Fema five factor model and information ratio. it is found that SRI stocks perform better as comparison to other non-SRI stocks portfolios in all condition, whether it is good or bad market condition, before financial crises and after financial crises, on the time of financial crises, and different business and macroeconomic condition .and my results are consistent with those (Tripathy & Bhandari, 2013) and (Goyal & Agrawal,2014).

It is proved that SRI equity portfolios can be used to established a defensive and better portfolio of investment partners in India with socially responsible investors.

When move towards the second objective to examine how investor sentiment impacts the stock price of SRI and Conventional Stock portfolios when macroeconomic news announcements are made. To examine daily stock related data are collected from BSE and RBI website from 2013-2016 and news are collected from Returs news, Google news, Business standard, Economics times and different online sources. First of all, it is found that the investors sentiment has significant role in the cross-section of the stock returns and the news announcement have significant impact in both the stock return as well as the sentiment.it is also found that positive news have positive impact on both the stock return as well as the sentiment and vice versa. The news announcement is directly affected the investor sentiment index and again the sentiment will affect the stock returns. It is also found that the investor sentiment is negatively correlated with the market volatility; that is, volatility increases (decreases) when investors become more bearish (bullish). the previous empirical literature evidence in support of all the hypothesis was strong.

LIMITATION OF THE STUDY

However, the current study is not free from certain boundaries. First, the sample of the index is relatively small because in India the sustainability index GREENEX & CARBONEX will be framed by BSE in 2011. Second, the consistency of the results has been affected due to the non-existence of the data of different series and different index for making a sentiment index. Third, the study is based on the Indian market only with no consideration of the international markets. forth, the Structural break appears when we see an unexpected shift in time-series. This can lead to huge forecasting errors and unreliability of the model in general. It can change previous trends or theories regarding stock returns. Lastly and major limitation of this studies is the limited time constraint. To understand the share market and their volatility and the factors for which market get fluctuated and finally making a study over it is a difficult job within a limited period of time.

SCOPE FOR FURTHER STUDY

The future scope of this work is enormous. First, the performance of SRI and NON-SRI can be estimated across various sectors and different business economic conditions of the country. Second, Fama-French three-factor model can be applied for calculating expected the return of the portfolio. Third, the performance of different ethical funds, shariah index, can also be compared with conventional funds and in the current studies

only BSE social responsibility is considered and the further studies can also be extending to the major country different social responsible index with the comparison to the conventional stock portfolio. Third, the studies will be extended the effect of investor sentiment on the return of a specific industry. Fourth, the findings of the study provide an evidence for stock market effects of real macroeconomic news. However, due to the fact that the printed news article and online published news article are transmitted the day after economic releases, it is impossible to develop trading strategies based on the information contained in the news articles. Therefore, future research should identify better proxies of real economic news that can be employed to generate profits from trading. The study also extended to impact of investor sentiment on the stock return of conventional stock return and non-conventional stock return and microeconomic news announcement. Fifth due to the limited time I can't make again segregation of scheduled and unscheduled to good and bad news and simultaneously national news and global news to the good and bad news. So, the further studies extended to segregation of macroeconomic news announcement and to examine whether it will affect the stock return of socially responsible stock indices or not. Last, instead of secondary data, primary data can also be used to judge investors sentiment in the stock market especially when macroeconomic news announcement is made in different sector or industry of stock portfolio.

CHAPTER -6

BIBLIOGRAPHY

Akhtar, S., Faff, R., Oliver, B., & Subrahmanyam, A. (2012). Stock salience and the asymmetric market effect of consumer sentiment news. *Journal of Banking & Finance*, *36*(12), 3289-3301

Alanyali, M., Moat, H. S., & Preis, T. (2013). Quantifying the relationship between financial news and the stock market. *Sci Rep*(3), 3578.

Andersen. (2007). Micro effects of macro announcements: Real-time price discovery in foreign exchange. *The American economic review, 93*(1), 38-62.

Azuma, T., Okada, K., & Hamuro, Y. (2014). Is No News Good News?: The Streaming News Effect on Investor Behavior Surrounding Analyst Stock Revision Announcement. *International Review of Finance, 14*(1), 29-51.

Baker, M., & Wurgler, J. (2006). Investor sentiment and the cross-section of stock returns. *The Journal of Finance, 61*(4), 1645-1680.

Bandopadhyaya, A., & Jones, A. L. (2016). Measuring Investor Sentiment in Equity Markets. In Asset Management. *Springer International Publishing.*, 258-269.

Becchetti, L., & Ciciretti, R. (2009, july). Corporate social responsibility and stock market performance. *Applied Financial Economics, 19*, 1283–1293.

Benson, K. L., Brailsford, T. J., & Humphrey, J. E. (2006). Do socially responsible fund managers really invest differently. *Journal of Business Ethics, 65*(4), 337-357.

Berry & Junkus. (2013). Socially responsible investing: An investor perspective. *Journal of Business Ethics, 112*(4), 707-720.

Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment; review of the recent literature. *Journal of Accounting and Economics,, 50*(2), 296-343.

Bollen, N. P. (2007). Mutual Fund Attributes and Investor Behavior. *Journal of Financial and Quantitative Analysis, 42*(3), 683-708.

Bo, L. I. (2010). Investors Sentiment, Way of IPO and Its First-day Revenue [J]. *Journal of Northeastern University (Social Science)*, *4*, 008

Brookins, B. D. (2014). *Investor Sentiment and Stock Returns.* Massachusetts Institute of Technology 2014.

BSE. (2016.). Retrieved from BSE: http://www.bseindia.com/indices/DispIndex.aspx?iname=CARBON&index_Code=77&page=130E3485-583D-4DED-98A2-F32F805D2324.

Bu, H., & Pi, L. (2014). Does investor sentiment predict stock returns? The evidence from Chinese stock market. *Journal of Systems Science and Complexity*, *27*(1), 130-143.

Cai , Joo and Zhang. (2009). The Impact of Macroeconomic Announcements on Real Time Foreign Exchange Rate in Emerging Markets. *FRB International Finance Discussion Paper*, *973.*

Capelle-Blancard, G., & Monjon, S. (2012). Trends in the literature on socially responsible investment: looking for the keys under the lamppost. *Business Ethics: A European Review, 21*(3), 239-250.

Chegut et.al. (2011, march). Assessing SRI fund performance research: Best practices in empirical analysis. *Sustainable Development, 19*(2), 77-94.

Climent, F., & Soriano, P. (2011). "Green and good? The investment performance of US environmental mutual funds. *Journal of Business Ethics, 103*(2), 275-287.

Climent, Francisco & Pilar Soriano. (2011). "Green and good? The investment performance of US environmental mutual funds. *Journal of Business Ethics, 103*(2), 275-287.

Cortez, M. C., Silva, F., & Areal, N. . (2012). Socially responsible investing in the global market: The performance of US and european funds. *International Journal of Finance & economics, 17*(3), 254-271.

Cortez, Silva & Areal. (2012). Socially responsible investing in the global market: The performance of US and European funds. *International Journal of Finance & Economics, 17*(3), 254-271.

Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor psychology and security market under-and overreactions. *the Journal of Finance*, *53*(6), 1839-1885.

Deng, Xin, Kang & Low. (2013). "Corporate social responsibility and stakeholder value maximization: Evidence from mergers. *Journal of Financial Economics, 110*(1), 87-109.

Dempsey, S. J., Harrison, D. M., Luchtenberg, K. F., & Seiler, M. J. (2012). Financial opacity and firm performance: the readability of REIT annual reports. *The Journal of Real Estate Finance and Economics*, *45*(2), 450-470.

Di Giuli, A., & Kostovetsky, L. (2014). Are red or blue companies more likely to go green? Politics and corporate social responsibility. *Journal of Financial Economics*, 158-180.

Dorn, D., & Huberman, G. (2005). Talk and action: What individual investors say and what they do. *Review of Finance, 9*(4), 437-481.

Elias, E. (2012). The performance of socially responsible investment: evidence from shariah complient stock. *Euromed Management Business School*.

Erhemjamts, O., Li, Q., & Venkateswaran, A. (2013). Corporate social responsibility and its impact on firms' investment policy, organizational structure, and performance. *Journal of Business Ethics, 118*(2), 395-412.

Erhemjamts, Otgontsetseg, Qian Li & Venkateswaran. (2013). "Corporate social responsibility and its impact on firms' investment policy, organizational structure, and performance. *Journal of Business Ethics, 118*(2), 395-412.

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

Feuerriegel, Ratku & Neumann. (2016). Analysis of how underlying topics in financial news affect stock prices using latent dirichlet allocation. *49th Hawaii International Conference on System Sciences (HICSS)* (1072-1081).

Figlewski, S., Frydman, H., & Liang, W. (2012). Modeling the effect of macroeconomic factors on corporate default and credit rating transitions. *International Review of Economics & Finance*, *21*(1), 87-105.

Fisher, K. L., & Statman, M. (2000). Investor Sentiment and Stock Returns. *Financial Analysts Journal*, 16-23.

Galema, R., Plantinga, A., & Scholtens, B. (2008). The stocks at stake: Return and risk in socially responsible investment. *Journal of Banking & Finance, 32*, 2646–2654.

Giuli & Kostovetsky. (2014). Are red or blue companies more likely to go green? Politics and corporate social responsibility. *Journal of Financial Economics*, 158-180.

Glac. (2009). Understanding socially responsible investing: The effect of decision frames and trade-off options. *Journal of Business Ethics, 87*(1), 41-55.

Glaser, M., Langer, T., Reynders, J., & Weber, M. (2007). Framing Effects in Stock Market Forecasts: The difference between asking for prices and asking for returns. *Review of Finance, 11*(2), 325-357.

Graves and Waddock. (1994). Institutional Owners and Corporate Social Performance. *The Academy of Management Journal,, 37*(4), 1034-1046.

Hanousek & Kočenda. (2011). Foreign news and spillovers in emerging European stock markets. *Review of International Economics, 19*(1), 170-188.

Harju, K., & Hussain, S. M. (2011). Intraday seasonalities and macroeconomic news announcements. *European Financial Management, 17*(2), 367-390.

Hassan, O. A., & Marston, C. (2010). *Disclosure measurement in the empirical accounting literature-a review article.* Accountancy Discussion Papers, Accountancy Research Group, Heriot-Watt University, Edinburgh.

Hisano, R., Sornette, D., Mizuno, T., Ohnishi, T., & Watanabe, T. (2013). High quality topic extraction from business news explains abnormal financial market volatility. *PloS one, 8*(6).

Hume, S. R., & Larkin, A. (2008). The Performance of Socially Responsible Investing. 2-23.

Ioannou, I., & Serafeim, G. (2015). "The impact of corporate social responsibility on investment recommendations: Analysts' perceptions and shifting institutional logics. *Strategic Management Journal, 36*(7), 1053-1081.

Jiang, G. J., Konstantinidi, E., & Skiadopoulos, G. (2012). Volatility spillovers and the effect of news announcements. *Journal of Banking & Finance*, *36*(8), 2260-2273.

Jianmin, J. X. G. D. S., & Hongzhong, L. (2002). An Empirical Analysis of Closed fund Discounts in China [J]. *Social Sciences In China*, *5*, 005.

Kempf & Osthoff. (2007). The Effect of Socially Responsible Investing on.

Kerl, A., Schürg, C., & Walter, A. (2014). The impact of Financial Times Deutschland news on stock prices: post-announcement drifts and inattention of investors. *Financial Markets and Portfolio Management, 28*(4), 409-436.

Kim, J. S., Kim, D. H., & Seo, S. W. (2017). Individual mean-variance relation and stock-level investor sentiment. *Journal of Business Economics and Management*, *18*(1), 20-34.

King, A. A., & Lenox, M. J. (2001). Does it really pay to be green: an empirical study of firm. *Journal of Industrial Ecology, 5*(1), 105-116.

Kostovetsky, A. D. (2014). Are Red or Blue Companies More Likely to go Green. *Journal of Financial Economics, 111*(1), 158-180.

Lin, A. (2013). *Consumer Information Systems and Relationship Management: Design, Implementation, and Use: Design, Implementation, and Use.* University of London: IGI Global.

Loukusa, P. (2011). Media Coverage and the Cross Section of Stock Returns : Evidence from UK markets.

Managi, S., Okimoto, T., & Matsuda, A. (2012). Do socially responsible investment indexes outperform conventional indexes? *22*(18), 1511-1527.

Marashdeh and Shrestha. (2010). Stock market integration in GCC countries. *Journal of International Finance and Economics, 37*, 102-114.

Marashdeh, H., & Shrestha, M. B. (2010). Stock market integration in GCC countries. *Journal of International Finance and Economics, 37*, 102-114.

McWilliams and Siegel. (2000, May). Corporate Social Responsibility and Financial Performance: Correlation or Misspecification? *Strategic Management Journal, 21*(5), 603-609.

Mian, G. M., & Sankaraguruswamy, S. (2012, march). Investor sentiment and stock market response to earnings news. *The Accounting Review, 87*(4), 1357-1384.

Mizuno, T., Ohnishi, T., & Watanabe, T. (2015). Novel and topical business news and their impact on stock market activities. *arXiv preprint arXiv, 1507*(06477).

Murthy, K. V., Bhandari, V., & Pandey, V. (2014). Does the indian stock market encourage Socially Responsible Companies? *Manthan Journal of Commerce and Management, 1*(01), 1-34.

Murthy, K. V., Varun Bhandari, and Vishal Pandey. (2014). Does the Indian Stock Market encourage Socially Responsible Companies. *Manthan Journal of Commerce and Management, 1*(01), 1-34.

Nath Mukherjee, K., & Mishra, R. K. (2010). Stock market integration and volatility spillover: India and its major Asian counterparts. *Research in International Business and Finance, 24*(2), 235-251.

Nelling & Webb. (2009). Corporate social responsibility and financial performance: the ‘‘virtuous circle’’ revisited. *Review of Quantitative Finance and Accounting, 32*(2), 197-209.

Nikkinen, J., & Sahlström, P. (2004). Impact of the federal open market committee's meetings and scheduled macroeconomic news on stock market uncertainty. *International Review of Financial Analysis*, *13*(1), 1-12.

Nikkinen, J., & Sahlström, P. (2004). Scheduled domestic and US macroeconomic news and stock valuation in Europe. *Journal of multinational financial management*, *14*(3), 201-215.

Nikkinen, J., Omran, M., Sahlström, P., & Äijö, J. (2006). Global stock market reactions to scheduled US macroeconomic news announcements. *Global Finance Journal*, *17*(1), 92-104.

Nofsinger, J., & Varma, A. (2013). Socially Responsible Funds and Market Crises. *Journal of Banking & Finance*, 1-48.

Oikonomou et.al. (2012). The Impact of Corporate Social Performance on Financial Risk and Utility: A Longitudinal Analysis. *financial management, 41*(2), 483-515.

Oikonomou, I., Brooks, C., & Pavelin, S. (2012). The Impact of Corporate Social Performance on Financial Risk and Utility: A Longitudinal Analysis. *financial management, 41*(2), 483-515.

peter & lynch. (2016). *rbcpa.* Retrieved nov 28, 2016, from http://www.rbcpa.com/lynch's25goldenrules.html

Phillips, Hager. (2007). Does Socially Responsible Investing Reduce Investment Returns? *Phillips, Hager & North Investment Management (PH&N)*.

Rangel. (2011). Macroeconomic news, announcements, and stock market jump intensity dynamics. *jiurnal ofbanking and finance, 35*(5), 1263-1276.

Renneboog, Horst & Zhang. (2008). Socially responsible investments:,Institutional aspects, performance, and investor behavior. *Journal of Banking & Finance, 32*, 1723-1742.

Renneboog, Luc, Jenke Ter Horst, and Chendi Zhang. (2008). "Socially responsible investments: Institutional aspects, performance, and investor behavior." . *Journal of Banking & Finance , 32*(9).

Riordan, R., Storkenmaier, A., Wagener, M., & Zhang, S. S. (2013). Public information arrival: Price discovery and liquidity in electronic limit order markets. *Journal of Banking & Finance*, *37*(4), 1148-1159

Schlarbaum, G. G., Lewellen, W. G., & Lease, R. C. (1978). Realized returns on common stock investments. *The experience of individual investors. Journal of Business*, 299325.

Schmeling, M. (2009). Investor sentiment and stock returns: Some international evidence. *Journal of empirical finance, 16*(3), 394–408.

Schnietz, K. E., & Epstein, M. J. (2005). exploring the financial value of a reputation for corporate social responsibility during a crises. *Corporate Reputation Review, 7*(4), 327-345.

Seth, N., & Sharma, A. K. (2015). International stock market efficiency and integration: evidences from Asian and US markets. *Journal of Advances in Management Research, 12*(2), 88-106.

Shank, T., Manullang, D., & Hill, R. (2005). Doing well while doing good revisited: a study of responsible firms' short-term versus long-term performance. *Managerial Finance, 31*(8), 33-46.

Singhania & Gandhi. (2015). Social and environmental disclosure index: perspectives from Indian corporate sector. *Journal of Advances in Management Research, 12*(2), 192-208.

Singhania, M., & Gandhi, G. (2015). Social and environmental disclosure index: perspectives from Indian corporate sector. *Journal of Advances in Management Research, 12*(2), 192-208.

Statman & Meir. (2000, may). Socially Responsible Mutual Funds. *Financial Analysts Journal, 56*(3), 30-39.

Statman, m. (2004). What do investors want ? *Journal of Portfolio Management, 30th Anniversary Issue*, 153-161.

Tahira, Y., & Mizuno, T. (2016). Trading strategy of a stock index based on the frequency of news releases for listed companies. *Evolutionary and Institutional Economics Review*, 1-8.

Tetlock, P. C. (2007). Giving content to investor sentiment: The role of media in the stock market. *The Journal of Finance, 62*(3), 1139-1168.

Tripathi, V., & Bhandari, V. (2014, dec). Socially Responsible Investing - An Emerging Concept in Investment Management. *FIIB Business Review, 3*(4), 16-30. Retrieved from http://ssrn.com/abstract=2601287

Tripathi, V., & Bhandari, V. (2015). Socially responsible stocks: a boon for investors in India. *Journal of Advances in Management Research, 12*(2), 209-225.

UNIPRI. (2006.). Retrieved from UNIPRI: Sources: www.unpri.org

Weber, M., Weber, E. U., & Nosić, A. (2012). Who takes risks when and why: Determinants of changes in investor risk taking. *Review of Finance, 17*, 847–883.

ANNEXURES

Annexures-1 BSE GREENEX listed companies

S&P BSE GREENEX is an index of sustainability stocks that help investors looking for green companies. This is India's first carbon efficient live index. It measures the performance of companies in terms of carbon emissions. It has 25 companies from the broader BSE 100 Index that meet energy efficient norms, allowing investors to derive benefit from the related cost savings.

Company Name	Industry Sector Wise
Tata Motors	Auto - LCV & HCV
Maruti	Auto, Cars and Jeeps
Mahindra And Mahindra	Auto, Cars and Jeeps
Hero Moto Corp	Auto 2 & 3-Wheeler
Axis Bank	Banks -Private Sector
ICICI Bank	Banks -Private Sector
Kotak Bank	Banks -Private Sector
Upl	Chemicals
ITC- Indian Tobacco Company	Cigarettes
TCS- Tata Consultancy Service	Computer Software
Infy-Infosys	Computer Software
DLF	Construction and Contract
LT-Lution And Turbo	Construction and Contract
HDFC	Financing House
Vedanta Alumina	Mining and Minerals
Titan	Miss
Gail	Oil Drilling and Exploration
Sun Pharma	Pharmaceuticals
Lupin	Pharmaceuticals
Dr Reddy	Pharmaceuticals
Cipla	Pharmaceuticals
Reliance Infra	Power Generation and Distribution
Power Grid	Power Generation and Distribution
Bharti Airtel	Telecommunication
Tata Steel	Steel - Large

Sources- BSE

ANNEXURES-2 BSE CARBONEX LISTED COMPANY

company name	Industry sector wise
ABB India	Infrastructure - General

Hindalco	Aluminum
Bajaj Auto	Auto - 2 & 3 Wheelers
Hero Moto corp.	Auto - 2 & 3 Wheelers
M&M	Auto - Cars & Jeeps
Maruti Suzuki	Auto - Cars & Jeeps
Ashok Leyland	Auto - LCVs & HCVs
Tata Motors	Auto - LCVs & HCVs
Exide Ind	Auto Ancillaries
Axis Bank	Banks - Private Sector
Federal Bank	Banks - Private Sector
HDFC Bank	Banks - Private Sector
ICICI Bank	Banks - Private Sector
IndusInd Bank	Banks - Private Sector
Kotak Mahindra	Banks - Private Sector
Yes Bank	Banks - Private Sector
Bank of Baroda	Banks - Public Sector
Bank of India	Banks - Public Sector
Canara Bank	Banks - Public Sector
IDBI Bank	Banks - Public Sector
PNB-PUNJAB NATIONAL BANK	Banks - Public Sector
SBI-STATE BANK OF INDIA	Banks - Public Sector
Union Bank	Banks - Public Sector
United Brewerie	Breweries & Distilleries
United Spirits	Breweries & Distilleries
Bharat Forge	Castings & Forgings
ACC	Cement - Major
Ambuja Cements	Cement - Major
Ultra Tech Cement	Cement - Major
Tata Chemicals	Chemicals
UPL	Chemicals
ITC- INDIAN TABACO COMPANY	Cigarettes
HCL Tech	Computers - Software
Infosys	Computers - Software
TCS- TATA CONSULTANCY SERVICE	Computers - Software
Tech Mahindra	Computers - Software
Wipro	Computers - Software
Unitech	Construction & Contracting - Civil
DLF	Construction & Contracting - Real Estate
HDIL	Construction & Contracting - Real Estate
Grasim	Diversified
Crompton Greave	Electric Equipment
Cummins	Engines
HDFC	Finance - Housing
LIC Housing Fin	Finance - Housing

Reliance Capital	Finance - Investments
Bajaj Finance	Finance - Leasing & Hire Purchase
M&M Financial	Finance - Leasing & Hire Purchase
Shriram Trans	Finance - Leasing & Hire Purchase
IDFC	Finance - Term Lending Institutions
Power Finance	Finance - Term Lending Institutions
REC	Finance - Term Lending Institutions
Nestle	Food Processing
BHEL	Infrastructure - General
GMR Infra	Infrastructure - General
Jaiprakash Asso.	Infrastructure - General
Larsen	Infrastructure - General
Siemens	Infrastructure - General
zee entertain	Media & Entertainment
Hind Zinc	Metals - Non-Ferrous
Coal India	Mining & Minerals
NMDC	Mining & Minerals
Vedanta	Mining & Minerals
Titan Company	Miscellaneous
GAIL	Oil Drilling and Exploration
ONGC	Oil Drilling and Exploration
Asian Paints	Paints & Varnishes
Colgate	Personal Care
Dabur India	Personal Care
Godrej Consumer	Personal Care
HUL	Personal Care
Marico	Personal Care
Cadila Health	Pharmaceuticals
Cipla	Pharmaceuticals
Divis Labs	Pharmaceuticals
Dr Reddys Labs	Pharmaceuticals
Glenmark	Pharmaceuticals
Lupin	Pharmaceuticals
Sun Pharma	Pharmaceuticals
Tata Global Bev	Plantations - Tea & Coffee
NHPC	Power - Generation & Distribution
NTPC	Power - Generation & Distribution
Power Grid Corp	Power - Generation & Distribution
Reliance Infra	Power - Generation & Distribution
Reliance Power	Power - Generation & Distribution
Tata Power	Power - Generation & Distribution
BPCL	Refineries
HPCL	Refineries
IOC	Refineries

Reliance	Refineries
JSW Steel	Steel - Large
SAIL	Steel - Large
Tata Steel	Steel - Large
Jindal Steel	Steel - Sponge Iron
Bharti Airtel	Telecommunications - Service
Idea Cellular	Telecommunications - Service
Reliance Communication	Telecommunications - Service

Sources- BSE

Annexture-3 (UNIPRI) Principles

We believe that an economically efficient, sustainable global financial system is a necessity for long-term value creation. Such a system will reward long-term, responsible investment and benefit the environment and society as a whole.

Principle 1: We will incorporate ESG issues into investment analysis and decision-making processes.

Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices.

Principle 3: We will seek appropriate disclosure on ESG issues by the entities in which we invest.

Principle 4: We will promote acceptance and implementation of the principles within the investment industry.

Principle 5: We will work together to enhance our effectiveness in implementing the principles.

Principle 6: We will each report on our activities and progress towards implementing the principles. **Sources- UNIPRI**

Annexure -4 factors of ESG

ENVIRONMENTAL (E)	SOCIAL (S)	GOVERNANCE (G)
• climate change • greenhouse gas (GHG) emissions • resource depletion, including water	• working conditions, including slavery and child labour • local communities, including	• executive pay • bribery and corruption • political lobbying and donations

• waste and pollution • deforestation	indigenous communities conflict • health and safety • employee relations and diversity	• board diversity and structure • tax strategy

Sources- UNIPRI

Annexure-5 Results of t -Test

	Test Value = 1					
					95% Confidence Interval of the Difference	
	T	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
sensex_2013	403.338	247	.000	19713.69117	19617.4235	19809.9589
largecap_2013	411.884	247	.000	2287.44153	2276.5031	2298.3800
greenex_2013	341.707	247	.000	1585.59121	1576.4518	1594.7306
carbonex_2013	397.873	247	.000	959.93476	955.1827	964.6868
sensex_2014	149.074	242	.000	24649.81963	24324.1051	24975.5342
largecap_2014	143.942	242	.000	2857.26765	2818.1666	2896.3687
greenex_2014	129.475	242	.000	2013.24226	1982.6131	2043.8714
carbonex_2014	142.877	242	.000	1199.92066	1183.3776	1216.4637
sensex_2015	365.837	247	.000	27351.17161	27203.9166	27498.4266
largecap_2015	367.619	247	.000	3212.57669	3195.3645	3229.7889
greenex_2015	432.261	247	.000	2310.06085	2299.5350	2320.5867
carbonex_2015	397.244	247	.000	1350.10456	1343.4105	1356.7986
sensex_2016	274.897	246	.000	26371.75903	26182.8034	26560.7146
largecap_2016	244.838	246	.000	3129.06879	3103.8963	3154.2413
greenex_2016	224.074	246	.000	2317.76939	2297.3958	2338.1430
carbonex_2016	226.270	246	.000	1335.03834	1323.4170	1346.6597

Sources: Author Compilation & Computation

Annexure-6 descriptive statistics of selected sample for Principal Component Analysis

VARIABLES / STAT	BSETR	FCAPFLO	CBRTN	CEFD	FUTURE	FRXRES	VLTIDX	VOI	MF	NOI
Mean	1.300795	0.000674	0.000390	0.002302	-1.009001	-0.000931	0.006453	1.300795	0.003545	5.31E-05
Median	13.38000	0.001557	0.000373	0.003566	0.210000	0.000000	-0.310000	13.38000	-0.015193	0.002980
Maximum	7268.770	0.089134	0.015390	4.412457	42.85000	0.009013	24.64000	7268.770	4.157073	1.170261
Minimum	-7306.360	-0.103468	-0.024567	-5.260401	-1337.360	-0.296865	-16.79000	-7306.360	-4.995466	-1.124791
Std. Dev.	834.5118	0.018786	0.001935	0.708339	44.50740	0.015030	3.463964	834.5118	0.770689	0.138234
Skewness	-0.045227	-0.093537	-2.114923	-0.803488	-27.64073	-15.11134	1.494728	-0.045227	0.036373	0.116091
Kurtosis	25.56297	5.554290	42.19670	13.74966	830.2217	249.1422	17.41067	25.56297	13.47689	17.97636
Jarque-Bera	20809.29	268.1153	63530.90	4828.874	28095504	2513789.	8853.696	20809.29	4486.874	9170.107
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	1276.080	0.660761	0.382798	2.257813	-989.8300	-0.913368	6.330000	1276.080	3.477503	0.052099
Sum Sq. Dev.	6.82E+08	0.345845	0.003671	491.7099	1941291.	0.221372	11759.07	6.82E+08	582.0823	18.72635
Observations	981	981	981	981	981	981	981	981	981	981

Note= BSETR= Total BSE Turnover, FCAPFLO= Foreign Capital Inflow, CBRTN= Corporate Bond Return, CEF= Close Ended Fund Discount, FUTURE, = BSE futures, FRXRES = Forex Reserve, VLTIDX= volatility index, VOI= value of IPO, MF= Mutual Fund, NOI= No of IPO

Sources: Author Compilation & Computation

Principal Components Analysis

Computed using: Ordinary correlations
Extracting 10 of 10 possible components

Eigenvalues: (Sum = 10, Average = 1)

Number	Value	Difference	Proportion	Cumulative Value	Cumulative Proportion
1	2.427445	1.218317	0.2427	2.427445	0.2427
2	1.209128	0.052485	0.1209	3.636573	0.3637
3	1.156643	0.098229	0.1157	4.793215	0.4793
4	1.058414	0.081270	0.1058	5.851629	0.5852
5	0.977144	0.014669	0.0977	6.828773	0.6829
6	0.962475	0.103038	0.0962	7.791248	0.7791
7	0.859437	0.066662	0.0859	8.650684	0.8651
8	0.792775	0.236234	0.0793	9.443459	0.9443
9	0.556541	0.556541	0.0557	10.00000	1.0000
10	-1.96E-16	---	-0.0000	10.00000	1.0000

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6	PC 7	PC 8	PC 9	PC 10
BSE TURNOVER	0.616527	-0.050420	-0.102873	0.009137	0.022141	-0.063520	0.044244	0.020645	-0.315876	-0.707107
FOREIGN CAPITAL INFLOW	0.010689	0.634114	-0.242450	0.163638	0.191399	0.162591	-0.020350	0.669417	0.024960	1.44E-16
CORPORATE BOND RETURN	0.035637	-0.306170	0.307125	0.556741	-0.452736	0.110121	-0.391621	0.357285	-0.050870	4.53E-17
CLOSE ENDED FUND	0.121176	0.267030	0.487456	-0.159986	0.410063	0.023285	-0.668521	-0.180553	-0.050871	1.07E-16
FUTURES	0.041186	-0.235918	0.027362	0.573256	0.626426	0.353711	0.229351	-0.169905	0.119515	4.53E-17
FOREX RESERVE	0.041663	0.546731	-0.152023	0.407382	-0.370025	0.120179	-0.041115	-0.596377	-0.039498	-7.42E-18
VOLATILITY INDEX	0.013176	0.179811	0.620427	-0.188923	-0.167107	0.466551	0.488246	0.058744	-0.243812	-6.09E-17
VALUE OF IPO	0.616527	-0.050420	-0.102873	0.009137	0.022141	-0.063520	0.044244	0.020645	-0.315876	0.707107
MUTUAL FUND	0.030378	0.200402	0.412949	0.300693	0.085151	-0.758306	0.318467	0.051232	0.107927	1.08E-17
NO OF IPO	0.468181	0.026544	0.093796	-0.129646	-0.157354	0.143434	0.035855	0.012919	0.841255	3.39E-16

Ordinary correlations:

	BSETURNOVER1	CAPITALINFLOW1	CB_RETURN	CEF1	FUTURES1	FOREXRESERVE1	VLTIDX1	VOI1	MF1	NOI1
BSETURNOVER1	1.000000									
CAPITALINFLOW1	0.007764	1.000000								
CB_RETURN	0.024212	-0.095211	1.000000							
CEF1	0.093538	0.038979	-0.013118	1.000000						
FUTURES1	0.055166	-0.008212	0.070081	0.002392	1.000000					
FOREXRESERVE1	0.031316	0.166740	0.009723	-0.001382	-0.025411	1.000000				
VLTIDX1	-0.036643	-0.007492	0.026231	0.105196	-0.016314	0.004366	1.000000			
VOI1	1.000000	0.007764	0.024212	0.093538	0.055166	0.031316	-0.036643	1.000000		
MF1	0.029195	0.011094	0.038546	0.079309	-0.001600	0.036244	0.047712	0.029195	1.000000	
NOI1	0.528151	-0.005326	0.040187	0.115018	-0.022663	0.040121	0.105577	0.528151	-0.012414	1.000000

Sources: Author Compilation & Computation

Annexures -7: Model – 1

Dependent Variable: CARBONRX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000384	0.000247	1.556887	0.1198
SENTIMENT	-0.005301	0.000213	-24.94202	0.0000

R-squared	0.388547	Mean dependent var	0.000384
Adjusted R-squared	0.387923	S.D. dependent var	0.009880
S.E. of regression	0.007730	Akaike info criterion	-6.885369
Sum squared resid	0.058499	Schwarz criterion	-6.875403
Log likelihood	3379.274	Hannan-Quinn criter.	-6.881578
F-statistic	622.1046	Durbin-Watson stat	1.762745
Prob(F-statistic)	0.000000		

Dependent Variable: GREENEX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000411	0.000251	1.638342	0.1017
SENTIMENT	-0.005070	0.000216	-23.44206	0.0000

R-squared	0.359515	Mean dependent var	0.000411
Adjusted R-squared	0.358861	S.D. dependent var	0.009824
S.E. of regression	0.007866	Akaike info criterion	-6.850428
Sum squared resid	0.060579	Schwarz criterion	-6.840462
Log likelihood	3362.135	Hannan-Quinn criter.	-6.846637
F-statistic	549.5300	Durbin-Watson stat	1.805417
Prob(F-statistic)	0.000000		

Dependent Variable: LARGECAP RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000371	0.000245	1.516203	0.1298
SENTIMENT	-0.005182	0.000211	-24.56491	0.0000

R-squared	0.381333	Mean dependent var	0.000371
Adjusted R-squared	0.380701	S.D. dependent var	0.009748
S.E. of regression	0.007671	Akaike info criterion	-6.900580
Sum squared resid	0.057616	Schwarz criterion	-6.890613
Log likelihood	3386.734	Hannan-Quinn criter.	-6.896788
F-statistic	603.4349	Durbin-Watson stat	1.776513
Prob(F-statistic)	0.000000		

Annextures-8 : Model-2

Dependent Variable: SENTIMENT
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.039651	0.046740	-0.848326	0.3965
GLOBAL NEWS	-0.434554	0.091650	-4.741461	0.0000
NATIONAL NEWS	0.451535	0.081186	5.561741	0.0000

R-squared	0.056744	Mean dependent var	-3.01E-17
Adjusted R-squared	0.054815	S.D. dependent var	1.161752
S.E. of regression	1.129463	Akaike info criterion	3.084414
Sum squared resid	1247.621	Schwarz criterion	3.099364
Log likelihood	-1509.905	Hannan-Quinn criter.	3.090102
F-statistic	29.41703	Durbin-Watson stat	1.741620
Prob(F-statistic)	0.000000		

Dependent Variable: SENTIMENT
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.281199	0.048738	-5.769648	0.0000
SC NEWS	0.685200	0.086315	7.938336	0.0000
USC NEWS	0.440539	0.081752	5.388731	0.0000

R-squared	0.073667	Mean dependent var	-3.01E-17
Adjusted R-squared	0.071773	S.D. dependent var	1.161752
S.E. of regression	1.119285	Akaike info criterion	3.066310
Sum squared resid	1225.237	Schwarz criterion	3.081260
Log likelihood	-1501.025	Hannan-Quinn criter.	3.071998
F-statistic	38.88798	Durbin-Watson stat	1.716513
Prob(F-statistic)	0.000000		

Annextures-9 Model-3

Dependent Variable: CARBONEX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.76E-05	0.000402	-0.143345	0.8860
NATIONAL	-0.001541	0.000703	-2.192037	0.0286
DUMMYGLOBAL	0.004301	0.000780	5.512342	0.0000

R-squared	0.037379	Mean dependent var	0.000384
Adjusted R-squared	0.035410	S.D. dependent var	0.009880
S.E. of regression	0.009704	Akaike info criterion	-6.429508
Sum squared resid	0.092096	Schwarz criterion	-6.414558
Log likelihood	3156.674	Hannan-Quinn criter.	-6.423821
F-statistic	18.98784	Durbin-Watson stat	1.809758
Prob(F-statistic)	0.000000		

Dependent Variable: LARGECAP RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000102	0.000396	-0.257064	0.7972
NATIONAL NEWS	-0.001432	0.000693	-2.065838	0.0391
GLOBAL NEWS	0.004313	0.000770	5.603461	0.0000

R-squared	0.037737	Mean dependent var	0.000371
Adjusted R-squared	0.035769	S.D. dependent var	0.009748
S.E. of regression	0.009572	Akaike info criterion	-6.456820
Sum squared resid	0.089614	Schwarz criterion	-6.441870
Log likelihood	3170.070	Hannan-Quinn criter.	-6.451133
F-statistic	19.17693	Durbin-Watson stat	1.806824
Prob(F-statistic)	0.000000		

Dependent Variable: GREENEX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.12E-05	0.000400	0.053173	0.9576
NATIONAL NEWS	-0.001647	0.000699	-2.355685	0.0187
GLOBAL NEWS	0.004184	0.000776	5.392378	0.0000

R-squared	0.036957	Mean dependent var	0.000411
Adjusted R-squared	0.034987	S.D. dependent var	0.009824
S.E. of regression	0.009651	Akaike info criterion	-6.440516
Sum squared resid	0.091087	Schwarz criterion	-6.425567
Log likelihood	3162.073	Hannan-Quinn criter.	-6.434829
F-statistic	18.76538	Durbin-Watson stat	1.810042
Prob(F-statistic)	0.000000		

Dependent Variable: GREENEX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002095	0.000413	5.069111	0.0000
SC NEWS	-0.004582	0.000745	-6.154276	0.0000
USC NEWS	-0.002445	0.000721	-3.393964	0.0007

R-squared	0.041775	Mean dependent var	0.000411
Adjusted R-squared	0.039815	S.D. dependent var	0.009824
S.E. of regression	0.009627	Akaike info criterion	-6.445532
Sum squared resid	0.090632	Schwarz criterion	-6.430582
Log likelihood	3164.533	Hannan-Quinn criter.	-6.439845
F-statistic	21.31841	Durbin-Watson stat	1.797727
Prob(F-statistic)	0.000000		

Dependent Variable: CARBONEX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002135	0.000423	5.050116	0.0000
SC NEWS	-0.004117	0.000740	-5.564808	0.0000
USC NEWS	-0.002776	0.000707	-3.927206	0.0001

R-squared	0.038660	Mean dependent var	0.000384
Adjusted R-squared	0.036694	S.D. dependent var	0.009880
S.E. of regression	0.009698	Akaike info criterion	-6.430840
Sum squared resid	0.091973	Schwarz criterion	-6.415891
Log likelihood	3157.327	Hannan-Quinn criter.	-6.425153
F-statistic	19.66508	Durbin-Watson stat	1.790055
Prob(F-statistic)	0.000000		

Dependent Variable: LARGECAP RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001621	0.000408	3.977653	0.0001
SC NEWS	-0.004113	0.000741	-5.550748	0.0000
USC NEWS	-0.001234	0.000730	-1.690759	0.0912

R-squared	0.030937	Mean dependent var	0.000371
Adjusted R-squared	0.028956	S.D. dependent var	0.009748
S.E. of regression	0.009606	Akaike info criterion	-6.449779
Sum squared resid	0.090247	Schwarz criterion	-6.434829
Log likelihood	3166.617	Hannan-Quinn criter.	-6.444092
F-statistic	15.61139	Durbin-Watson stat	1.789972
Prob(F-statistic)	0.000000		

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Dependent Variable: CARBONEX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000454	0.000318	-1.427005	0.1539
SENTIMENT	-0.005300	0.000219	-24.23601	0.0000
NATIONAL=0,DUMMYGLOBAL=1	0.001936	0.000697	2.775909	0.0056
NATIONAL=1,DUMMYGLOBAL=0	0.001705	0.000614	2.776202	0.0056
NATIONAL=1,DUMMYGLOBAL=1	0.005696	0.001566	3.636157	0.0003

R-squared	0.402686	Mean dependent var	0.000384
Adjusted R-squared	0.400238	S.D. dependent var	0.009880
S.E. of regression	0.007652	Akaike info criterion	-6.902648
Sum squared resid	0.057146	Schwarz criterion	-6.877732
Log likelihood	3390.749	Hannan-Quinn criter.	-6.893169
F-statistic	164.4953	Durbin-Watson stat	1.760282
Prob(F-statistic)	0.000000		

Dependent Variable: GREENEX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000370	0.000325	-1.140918	0.2542
SENTIMENT	-0.005040	0.000223	-22.58502	0.0000
NATIONAL=0,DUMMYGLOBAL=1	0.002025	0.000712	2.846456	0.0045
NATIONAL=1,DUMMYGLOBAL=0	0.001522	0.000627	2.428533	0.0153
NATIONAL=1,DUMMYGLOBAL=1	0.004487	0.001599	2.806707	0.0051

R-squared	0.370755	Mean dependent var	0.000411
Adjusted R-squared	0.368177	S.D. dependent var	0.009824
S.E. of regression	0.007809	Akaike info criterion	-6.862017
Sum squared resid	0.059516	Schwarz criterion	-6.837101
Log likelihood	3370.819	Hannan-Quinn criter.	-6.852538
F-statistic	143.7665	Durbin-Watson stat	1.805028
Prob(F-statistic)	0.000000		

Dependent Variable: LARGECAP RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000499	0.000315	-1.582543	0.1138
SENTIMENT	-0.005178	0.000217	-23.87831	0.0000
NATIONAL=0,DUMMYGLOBAL=1	0.002019	0.000691	2.920195	0.0036
NATIONAL=1,DUMMYGLOBAL=0	0.001791	0.000609	2.941107	0.0033
NATIONAL=1,DUMMYGLOBAL=1	0.005683	0.001553	3.658576	0.0003

R-squared	0.396508	Mean dependent var	0.000371
Adjusted R-squared	0.394035	S.D. dependent var	0.009748
S.E. of regression	0.007588	Akaike info criterion	-6.919298
Sum squared resid	0.056202	Schwarz criterion	-6.894382
Log likelihood	3398.916	Hannan-Quinn criter.	-6.909820
F-statistic	160.3138	Durbin-Watson stat	1.772108
Prob(F-statistic)	0.000000		

Dependent Variable: LARGECAP RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000856	0.000343	2.495626	0.0127
SENTIMENT	-0.005165	0.000218	-23.73322	0.0000
SC=0,USC=1	-0.001261	0.000600	-2.101450	0.0359
SC=1,USC=0	-0.001384	0.000650	-2.129521	0.0335
SC=1,USC=1	0.003625	0.001460	2.483695	0.0132

R-squared	0.391364	Mean dependent var	0.000371
Adjusted R-squared	0.388870	S.D. dependent var	0.009748
S.E. of regression	0.007621	Akaike info criterion	-6.910811
Sum squared resid	0.056681	Schwarz criterion	-6.885895
Log likelihood	3394.753	Hannan-Quinn criter.	-6.901332
F-statistic	156.8967	Durbin-Watson stat	1.787180
Prob(F-statistic)	0.000000		

Dependent Variable: CARBONEX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000893	0.000345	2.585009	0.0099
SENTIMENT	-0.005298	0.000219	-24.15046	0.0000
SC=0,USC=1	-0.001328	0.000604	-2.199080	0.0281
SC=1,USC=0	-0.001457	0.000652	-2.234228	0.0257
SC=1,USC=1	0.004079	0.001496	2.725992	0.0065

R-squared	0.399901	Mean dependent var	0.000384
Adjusted R-squared	0.397442	S.D. dependent var	0.009880
S.E. of regression	0.007670	Akaike info criterion	-6.897997
Sum squared resid	0.057412	Schwarz criterion	-6.873080
Log likelihood	3388.467	Hannan-Quinn criter.	-6.888518
F-statistic	162.5997	Durbin-Watson stat	1.776235
Prob(F-statistic)	0.000000		

Dependent Variable: GREENEX RETURN
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001074	0.000352	3.056029	0.0023
SENTIMENT	-0.005021	0.000223	-22.48405	0.0000
SC=0,USC=1	-0.001580	0.000615	-2.571279	0.0103
SC=1,USC=0	-0.001765	0.000664	-2.657641	0.0080
SC=1,USC=1	0.003114	0.001523	2.044241	0.0412

R-squared	0.370965	Mean dependent var	0.000411
Adjusted R-squared	0.368387	S.D. dependent var	0.009824
S.E. of regression	0.007808	Akaike info criterion	-6.862351
Sum squared resid	0.059496	Schwarz criterion	-6.837434
Log likelihood	3370.983	Hannan-Quinn criter.	-6.852872
F-statistic	143.8958	Durbin-Watson stat	1.821211
Prob(F-statistic)	0.000000		