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The Impact of Financial Crisis on the Corporate Risk and Return- A Comparison between the Finnish and Indian companies

Manjinder Singh

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JAMK University of Applied Sciences

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Abstract

In order to evaluate the stock performance in the market due to financial crisis of 2008, the risk and return variations for Indian and Finnish companies were studied over a period of 2005 to 2017, as risk and return relationship is most important for taking the correct financial decisions. The Capital Asset Price Model was the theoretical foundation for the study. The secondary data of companies was the source of the gathered information that had been extracted through the reliable sources such as company's annual reports, official databases and websites. These values were analysed through the SPSS analysis software. The graphical analysis, regression analysis and descriptive analysis had been done for testing the prepared set of hypotheses with respect to the research questions.

After keenly observing the findings, it could be concluded that stock returns had been performing better before crisis and its performance fall down during the financial crisis period and remained lower even after the crisis. The systematic risk, unsystematic risk and total risk got higher for the term of crisis as compared to their measures before and after crisis. The relationship between risk and returns had been significantly defined for their dependence on each other. The average of 15 Finnish and 30 Indian stocks had fallen down during the whole period of 2005 to 2017 due to financial crisis.

Keywords/tags (subjects) Risk, Systematic risk, Unsystematic risk, Return, Market performance, Jensen's Alpha.

Miscellaneous (Confidential information)

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1 Introduction

1.1 Background

The relationship between risk and return is one of the significant pillars of finance as it is the base for deciding whether to invest in a project or not. According to Campbell & Viceira (2005), this relationship shows the measure of return gathered and the risk undertaken for an investment. As there remains some proportion of uncertainity associated with every investment, it becomes essential to calculate the expected rate of return for a new project. The risk and return trade-off sets a great source for defining and evaluating the stock market performance. According to Brealey et al. (2011, 241), the Capital Asset Pricing Model (CAPM) acts as a foundation on which the analysis of the risk-return relationship is performed so as to access the performance of the stocks of a company in the market during a certain period of time.

The global financial crisis in 2008 shook most of the economies worldwide. This financial crisis enormously affected the highly powerful worldwide economies and the span of this financial crisis for countries such as: Finland and India was not an exceptional case as both of these countries faced the tenure of financial crisis, although, its impact on both countries was different. The root cause of this crisis had started in 2001-2002, the origin being the U.S. because of the derregulation in its financial industry, which was instigated due to the hedge funding by banks Carmassi et al. (2009). This crisis grossly affected almost every economy of the world. According to Scott (2014), despite the financial crisis in 2008, it is presently considered to be finished, and it is supposed that the shaken economies of the world are again recouping. The impacts that this situation brought, can be seen very clearly on the corporate sector of the nations through their falling returns, and therefore, on their economies, too.

Every country's economic conditions can be accessed by considering the market trends prevailing in the country. According to Jickling (2008), it is evident that the stock market analysis during a certain period of time can depict the fluctuations in the market during that period. After a broad review of literature, it was understood that there existed a critical loophole in determining the impacts of the global financial crisis on the risk and returns of a company (Taylor & Clarida, 2014).

1.2 Motivation for the Research

After examining various published research papers with respect to the risk and return relationship and the effect of crisis on these measures, it was understood that there had not been a broad range of relevant material available, particularly with respect to the current era and the market trends. Moreover, it was interesting to know the way in which two diverse countries faced the global financial crisis term, and this could be examined from the returns incurred by the Indian and Finnish companies during different periods of time. The research topic was of great interest for a Finance student, so the knowledge about economy and the crucial period of financial crisis, makes it an interesting topic to understand and to perform research on it.

There were several studies conducted on the general factors that propagated the financial crisis such as, how the economies suffered from that tough situation and the strategies that they undertook to minimize further financial loss. This made this topic so interesting. While researching, many questions naturally came to mind about the impact of the financial crisis globally and about comparing the impacts for the two distinct countries. This was an authentic task, which instigated to conduct a research on finding the impacts of the crisis on two completely contrasting economies: Finland and India. This was done by comparing the variations in the risk and return measures of their stocks. The comparison of the stock performance of two distinctive countries was naturally thrilling, which grew an urge to study this topic.

1.3 Research Objectives

The ultimate objective of the study was to examine the stock performance of the Finnish and Indian companies by examining the return and risk associated with the stocks of specific companies during the period of 2005-2017 by undertaking these measures under the CAPM's scope. The data set was formed of the stocks of 30 Indian companies that were listed in the Bombay Stock Exchange. Their data for the defined period was collected from the website bsesme.com. Data was also collected from 15 Finnish companies that were registered in the Nasdaq OMX Nordic stock exchange. Their data was collected from nasdaqomxnordic.com. The following are the research questions thus formed, for the study.

1. How does the firm level return change over time?
2. How does the firm level risk change over time?
    a) How does the firm level systematic risk change over time?
    b) How does the firm level unsystematic risk change over time?
3. How does the firm level Jensen's alpha change overtime?

A deep review of previous research was done to study the evidence in favour of the CAPM theory. Quantitative methods for collecting the data were used to conduct the research in an effective manner and to support the conclusions (Minasyan, 2015). For the current research, two distinct countries- Finland and India, in terms of culture, economies and business policies and classification of trade market were studied. The stock market performances of 30 non-financial Indian companies and 15 non-financial Finnish companies for the period before crisis were evaluated, and a comparison was made with their respective corporate sector market after the crisis term through theoretically and empirically collected data.

The data thus, collected, was categorized in the form of variables which were analyzed using a descriptive statistics analysis, graphical analysis and a regression analysis. The Jensen alpha determined through the CAPM was taken as a base to understand the performance of the stocks by comparing their expected returns with the actual returns and performance was evaluated through the SPSS analysis tool which had been earlier utilized by Özkan and Unsal (2012). The outputs thus, generated for both countries, clearly represented the effect of the crisis on risk and return, which was also evident from the research performed by Wallach (2015), Taking his study as a reference, helped in understanding the market fluctuations.

1.4 Structure of Thesis

The thesis report, after making the objectives of the study clear, further specifies in the Chapter "Research background” the risk and return variations for the companies. This further accounts for the sub-topics including: the concepts of return, risks and their relation with each other. The rate of return, types of return are studied, and the various risks associated with an investment are also studied the using the CAPM. After presenting information about these concepts that are vital to be understood before taking the studies to the practical implementation, the "Literature Review" chapter incorporates a review of the recent available literature, in order to understand the drawbacks in the previous studies and knowledge worthy concepts, which is certainly helpful in conducting this research. In the next chapter, "Methodology", the methods and models that were used for this research for efficiently conducting the research, are studied. It enlightens about the data collection and data analysis methods employed during the research. After that the chapter "Empirical Findings" discusses the practical findings of the study. The last chapter – “Conclusions and Discussion” presents the practical implications of the results along with their description, the validity of the hypotheses and a discussion about its managerial implications. In addition to this, the chapter also considers the limitations of the study and the further recommendations for better research in the future.

2 Theoretical Background

According to Davis (1970), risk and return have always been connected with each other and both these terms are even discussed in studies together. It is significant to understand the types of risks involved in a new venture in order to estimate the types of results that these risks can bring and to know whether all risks affect the rate of return. The relationship was also explored in the study by Rubaltelli et al. (2006). It is also essential to understand how the risk determines the returns. According to Scholtz's (2014) study, the systematic risks are mostly considered because these are the ones that affect the return rather that the unsystematic risks which can be removed with the process of diversification. A systematic risk defined as an inevitable type of risk associated with the economic system of a company. It deals with the sensitivity of the company's stock to stimulate market movement (Bodie et al., 2004).

2.1 Return

Every company's utmost purpose is to generate revenue. The term more conveniently used about the extra capital of a company, profit. In the field of finance, the term profit is more specifically determined as the return.

2.1.1 Rate of Return

The rate of return is a significant measure for the performance of an investment. A generalized way for measuring the rate of return is termed as Holding Period Return (HPR) defined by Brooks (2013). HPR is more specifically defined the dividend paid for a security and the calculated difference of the price of the security at the beginning from its price at the end of the holding period, and dividing the value by the beginning price as presented by Brooks and Upton (2017) below:

HPR (%) = dividend+ ((ending price - beginning price)/ beginning price)*100

However, Bodie and others (2004) state that if the dividend is paid before the sale of security, then this equation ignores the reinvestment dividend in the equation for an easy interpretation of HPR.

2.1.2 Types of return

The three types of return are defined by Mayo (2007, 146) as the expected, realized and actual return.

Expected return is the estimated rate of return which could be earned by the future investors of a company for a specific investment. It is basically the expected value of HPR that an investor can obtain, but this is not the amount that would certainly be earned for that given investment/project.

Realized return is measured from the historical data available with the company. Some researchers call realized return as the real return. It is the minimum return that is required by an investor to accept the levels of risk involved in sn investment, which means the cost of an investment that could be earned for a different project that is involving the similar kind of risks as the the project in question. This situation can help the investors by acting as a benchmark for making the final decisions.

Actual rate of return is the rate of return that is actually earned for a specifc investment, which varies according to the market conditions and the availibity of stock within a company (ibid).

2.2 Risk

The risk associated with an investment can not a quantified variable so it is explained indirectly through defining more specific terms and concepts associated with it, as proposed by Yang (2014).

2.2.1 Types of Risk

Risk free assets defined by Sibilkov (2007), are investments bound to impart a definite level of return after the completion of their holding period. An example of a risk free asset is the government bond because the government always has an option to return the value of the bond in any way such as printing the money to pay back the value. Thus, according to this, investors in a government bond are always ensured that their money will certainly come back to them without any losses incurred. Hence, the investors can invest in those kinds of investments, by thinking of their profits in advance. However, if a inflation takes place, then these bond's value would not be certain, but it would still be considered a proxy for a risk free venture, because of being the safest kind of investment that is available within the market. Thus, the returns incurred on these kinds of investments are said to be risk free.

Risk premium – Risk premium, as defined by Drobny (2010, 87), is the measure of compensation for an investment. It is measured as the excess of a risk free rate of return from the rate of return earned for an investment.

Risk- There is always an uncertainty associated with an investment, which means different outputs from what is expected for an investment. According to Bodie et al. (2004), a higher amount of risk associated with an investment tends to amplify the realized and expected risk. Taking risks can be an opportunity as well as a loss as there are no fixed rules as no one ever knows what will happen next. Thus, if higher risk is taken, it might lead to higher profits or to severe loss as well. Every investment is a risky task.

2.2.2 Unsystematic risk and Systematic risk

The stock market has always been a risky business as there are several outcomes involved in it. The most common and the usual way to measure these outcomes is the standard deviation as introduced by Fabozzi (2002, 27) or variance. According to Brealey et al. (2011, 214), the measure of risk associated with any stock of a company can be sub-divided into two categories, which are specific risk and the market risk. Specific risk affects a minimum number of assets of a company which are generally specific to a particular company or is applicable for only a smaller set of similar nature of companies. The market risk or the systematic risk is prone to market changes and it varies all over for the market. As holding of a single stock is risky at the end of investors, they tend to reduce the measure of risks thereby through holding of a diversified portfolio, which is a combination of all these securities including the stocks, cash, bonds and other financial assets, but the systematic risk (market risk or undiversifiable risk) cannot be eliminated. This sensitive variation in the market is known as beta (ibid).

2.3 Standard Deviation: A Measure of Risk

Before investing in any project, the investors need to think about every possible situation that can occur while the tenure of investment. In order to analyse every possible scenerio, the HPR for each scenario is also estimated. Also the probability of occurring of each of the scenario is estimated and the results thus calculated, is said to be the probability distribution of HPRs according to Bodie et al. (2004, 136). Undertaking an example with t scenerios is represented in (table 1), the possible HPR for every scenerio is represented by H and each of the probability as S:

Table1. Probability of every possible scenario

Scenario	Probability denoted as S(t)	HPR denoted as H(t)
1	S_1	H_1
2	S_2	H_2
3	S_3	H_3
....	...	....
T	S_t	H_t

The expected measure of rate and the expected measure of risk can be derived from the table above. The mean value of this distribution is measured as the expected return for a specific investment.

$$E(Ht) = H(t)S(t)$$

Here, H(t) is said to be the realized return for every scenario undertaken (ibid).

2.4 Variance Analysis

According to Fabozzi (2002, 27),the actual measurement of risk is caculated by the parameter called, Variance, which is defined as the variation incurred between the expected rate of return and the realized rate of return.

$$Var(r)=\Sigma_{t=1}{}^{t}\ S(t)\ (H(t)-\mu)^2$$ (Brealey et al. 2011, 214)

Due to the uncertainity involved in the actual rate of return for an investment, only the approximate value of risk can be measured. The standard deviation can be calculated by considering the square root for variance, ensuring the units for both the risk and return be relatable.

$$\sigma = \sqrt{V(r)}$$ (ibid)

During the evaluation of the stock, expected return and standard deviation comes in light and these are the most significant parameters in this concern as per the research performed by Lo (2008). The higher the value of standard deviation, the severity of the risk involved with the stock gets higher which cannot be favourable for the investors.

2.5 Beta

The concept of Beta is a significant component of the CAPM theory which was used for the research by Cia (2013) too. According to Luecke (2002), beta is specifically a representation for the systematic risk, which can be defined as the the market risk, which is further listed to be 'undiversified risk' or volatility. It can be defined as the risk that affects the entire market, not just a specific company. Beta can be said to show its responsiveness for the variation in the returns of a specific security with respect to the variations in the stock market. The value of beta to be one is set as a benchmark to measure the systematic risk involved as per the research by Watson & Head (2010).

Greater the value of beta for a specific security, a higher value of returns for that specific security can be expected. Let us suppose that the value of beta is 0.7 then the security can be said to be risen by 7% if the market risk gets raised by the 10%. As opposite to it, if the market risks get lowered by 10%, then the return of the security gets fallen by 7%. The value of beta higher than 1, is said to be aggressive and the value of beta to be lower than 1, is said to be fairly defensive. Higher beta stock accounts for the superior risk, which means it generates the higher returns but is prone to risk, while the lower stocks generated the lower rate of returns but is less risky according to McLaney (2009).

A contradiction arises as the researches show that there is minimal relationship between the beta and the potential return which is evident through the research by McAlpine (2010). Also, sometimes, lower stock of beta can even account for minimal risk, which can further bring the higher amount of profit.

The value of beta is considered as the covariance of the returns for a specific kind of security and market divided by the standard deviation of the market. As per the study performed by Watson & Head (2010, 240), the regression analysis is performed for the collection of data taking into consideration the returns of the market, earned periodically for the specific security being considered

$\beta = Cov(H_i, H_m) / \sigma m^2$ (Brealey et al., 2011, 214)

where, $Cov(H_i, H_m)$ = covariance of returns of the security called i and the market return;

σ_m = standard deviation of the market return.

2.6 Capital asset pricing theory

Capital asset pricing theory was proposed by William Sharpe in the year 1964 and John Lintner in 1965. This theory reflects the share valuation method involved in the corporate sector. The theory determines the type of relationship between the risk and the return involved in any investment being made a company, to be the linear kind of relationship. This theory proposed by MÜLLER (1989), is based on the ' Markowit'z portfolio theory', and is basically a continuation for it. The theory considers the following assumptions:

1. All the investors invest in a company in order to generate maximized profits.
2. The information is always available with the investors
3. It supports the assumption that it is possible to borrow as well as lend the capital at the risk-free rates (ibid).
4. Unsystematic risk can get dissolved with the various investments being undertaken by the investors as per the research by Mokkelbost (1971).
5. The markets are obviously competitive according to Watson & Head (2010, 238).

According to Lintner (1965), CAPM is most commonly used as a method to compute the rate of return, which is calculated by comparing the investments of a company with the other investments that are having the similar risk profiles. The rate of return can be measured as:

$R_{\text{security } i} = R_{free} + \beta_i (R_{market} - R_{free})$, (Brealey et al., 2011, 214)

where: $R_{\text{security } i}$ = the rate of return of security where i predicted by the CAPM model;

R_{free} = the risk-free rate;

β_i = the beta coefficient of security i;

R_{market}= Market return (ibid, 238).

From the above formula it can clearly be depicted that the rate of return for the model is predicted as $R_{\text{security i}}$, which is shown in percentage as this is the expected income being earned through the investment as per the evidences through the paper by Medina (1988).

Risk -free rate (R_{free}) defined in the paper by Damodaran (2008), is an investment involving no risk at all but the investment can never be at zero-risk rate as inflation is involved in the current economy. Also, the risk-free rate is given by the government bonds that are issued at the risk-free rates.

Beta Coefficient- Stowe (2007, 49) defined beta coefficient as the indication of the systematic risk involved in the process which depicts the returns of a specific security with respect to the respective market return of a country.

On the contrary, market return (R_{market}) represents the return of entire market. The different indexes supply the market return rates, which are calculated beforehand through the market trends followed during recent times as per the research performed by Boyte-White (2015).

Expected return

The CAPM measures the expected rate of return for any asset. Beta is used as a variable to measure the systematic risk of the individual securities and the ratio of stock's standard deviation to the market's standard deviation can measure the stock volatility with the market volatility.

Beta for a single asset = stock standard deviation / market's standard deviation (Brealey et al., 2011, 214)

If this ratio comes out to be a greater ratio then the measure of risk associated with the investment is much higher. If the value comes out to be 1, it means the actual returns of the stock tends to match the market return of the stock and if the value is greater than 1, then the investment is considered to be risky and is expected to earn a comparatively higher rate of return in the corresponding market. Also, higher value of beta depicts the higher systematic risk and hence, the stock is more sensitive to the variation in prices as per the variations observed in the market (Bodie et al., 2004).

2.7 Jensen Alpha

In order to analyze the performance of portfolios, individual securities or the investment precisely, it requires considering the risk and return of a specific portfolio by the investor to see if this investment compensates for the return of the investment as compared to the risks involved in this investment. If the return incurred through this investment comes out to be higher as compared to the expected risks involved then the investment is said to be less risky. In order to determine this value, CAPM measures the expected returns through the available stock of a company with respect to the actual returns for an investment as per the research by Minasyan (2015). The variation between the actual rate of return and expected rate of return for the available stocks of a company is called Jensen Alpha, denoted as α. If the value of the actual returns earned is lesser than the expected returns then the investment is said to have underperformed and vice versa.

This is a precise way of measuring the performance of a stock of a company as it considers the market risk of stocks only. If the value of Jensen alpha comes out to be positive, the investment is said to be over performed and if the value comes out to be negative, it determines the underperformance of the stock in the market (Lo,2008).

The value of Jensen Alpha can be calculated as below:

$R_{portfolio}$ = Actual rate of return earned for respective portfolio

R_{market} = Market rate of return

R_{free} = Risk-free rate of return over a certain period of time

β_i = the beta coefficient

$\alpha = R_{portfolio} – (R_{free} + \beta_i (R_{market} - R_{free}))$ (Brealey et al., 2011, 214).

3 Literature Review

A number of recent research papers have studied the most shocking act of the global financial crisis in 2008-2009 so as to understand the reasons for the monetary recession and the losses occurred. Many researchers have proposed their perspective of the performance of the international market on how the trends in the market changed during, before and after the financial deficit period for the nations. The researchers focused on understanding the performance of the stock market and the factors that propagated this shocking financial condition worldwide. A few of the research papers selected for this study are referenced below.

Franz et al. (2018) explored the impact of the capital market and company specific factors on the decisions related to financial activities within a company. Their study also determines how these two are related to a company's market value. The risk and return relationship described as well as the specific relationship between all these entities.

According to Tuan (2017), the Capital Asset Pricing Model(CAPM) is said to be the most significant technique in finance. Hence, the risk and return analysis and the stock performance analysis were performed using this technique. The study aimed to determine the relationship between the measurement for the risk and returns by analysing the stocks of the Finnish companies by considering the secondary data of the companies and analysing them over the period of 2012 to 2016. A series of regression tests was performed in order to specify the relationship between the risks and returns of a company.

Arora and Sharma (2016) focussed on determining the effect of corporate governance in the performance of companies by taking a large sample of studies into consideration. The empirical analysis done by the authors gave insights on 20 significant Indian manufacturing sector companies over the period of 2001-2010. Multiple estimation methods and specification techniques were employed for the study. The results suggest that companies in the developing phase can increase their performance at the market levels by incorporating the best corporate governance practices.

Michelberger (2016) studied the effect of corporate governance on firm performance and highlighted the research design problems, that eventually led to inconsistent results in the study. The research aimed to define the effect of corporate governance on a company. The effect was measured using an additional set of variables for financial research and no considerable consistency was found in relation to the effect of corporate governance on the performance of the companies. Thus, this factor does not apply to the current research.

Konečný and Zinecker's (2015) study aimed to propose a new method with the help of CAPM to calculate the ratio of operational and financial risks involved in a company, in order to determine the values of equity cost by measuring the beta coefficient, which is itself dependent on the entrepreneurial risk. The new proposed model calculated the ratio for the operational risk by considering it as the share for the unlevered/ levered beta whereas the proportion of the financial risk was calculated as the remainder of the value of levered beta.

Liao et al. (2015) provided with empirical evidence that the higher level of financial leverage definitely supports the intended governance of the corporate sector. Moreover, in order to ensure the better performance of the companies in the corporate sector, it is essential to create a balance between the company's debt and equity ratio. In other words, the capital structure of a company needs to be managed precisely order to achieve the desired level of shareholders for a company for its stable growth and development.

Machdar (2015) proposed using the statistics of the SPSS analysis tool for the companies in the Indonesian Stock Exchange over a period of 2009-2012 in order to analyze the effect of capital structure, firm risk and market risk on the stock returns of a company,. The outcomes of the study suggested that the capital structure, systematic risk and unsystematic risk variables together the positive effect on the stock return, with the capital structure showing a significant impact separately. The systematic risk showed a negative effect, and the unsystematic risk also had a considerable negative effect on the stock return. A few limitations in the study were the small set of samples taken for the analysis and the fact that the stock returns were calculated excluding the consideration of the risk involved.

Bajwa (2012) studied the impact of the global financial crisis on India and the responses made by analysing the role of its financial sector. The need of the study arose from the fact that the Indian economy survived the 2008 crisis period. The author supported the notion that the impact of the financial crisis on the Indian economy was not as severe as compared to other economies because of the monetary policies and timely responses made by the country along with its strengthened economy that favoured the situation.

Levy (2012, 192), conducted a study in which the methods similar to those by Linter, the founder of CAPM. The author of the study performed the same type of a two stage regression analysis on 301 stocks and found 301 units of beta corresponding to every stock. Then a cross sectional regression was performed to examine the validity of return and beta.

Kantor and Holdsworth(2010) focused on the measures taken during and after financial crisis, rather than throwing light on how to prevent this devastating condition of the economy, which further influences the markets badly. The financial crisis of the 19th century was taken as a base for this paper, which focused on the ways resolving the financial crisis. After this, the historical financial crisis of 2008 was taken into consideration for keeping the cash flowing so as to let the corporate sector develop. The fundraising ways were also discussed and appreciated to consider shareholders in a company, as this was the best of the ways to raise capital for a company and survive a financial crisis.

Viswanathan (2010) studied that due to the financial crisis occurred in 2008, many countries have made more responsive and strong financial policies to face the similar future situations toughly. The author supported that Indian economy survived the period and concluded that the advanced economies like the U.S. and European economy faced the severe contraction in the international stock market.

According to Gerber and Hens (2009), Jensen alpha being a difference in the actual and minimum rate of return for an investment, is an important factor in finance management. The research was conducted to determine the rise in the value of alpha in the market equilibrium while the CAPM gets expansion towards the heterogeneous beliefs. It was concluded after the research that the positive value of alpha cannot always be considered as the best basis for the criteria of identifying an investment as to be an active or passive investment.

Lutomia and Ogot (2002) performed the study to conclude this statement that the involvement of risk with a company is of higher priority for any investor. While performing this research it was determined that the returns are just partially dependent on the level of risks involved with a company. Out of the type of risks involved, the diversifiable part of the risk is of the most importance while the capital structure being a considerable factor for influencing the risks.

Similar work on CAPM performed by other researchers include the research that Levy(1978) performed for the CAPM by considering the data set of 101 stocks with an exception of performing second regression for three times.

Other CAPM related work was performed by Fama and MacBeth(1973), in which they did the examination of relationship between beta and returns by considering the porfolios in place of stocks.

Miller and Scholes(1972) also did the research on CAPM with an exception of considering an additional variable of variance for residual term which was found in second regression and then accounted for the variation in return by taking beta and residual terms as the evidences.

After studying these few researches, the concept of risk and returns for an investment, its relationship with each other and the methods for analyzing the stock performance, is made clear. Thus, after studying these papers, a more defined way of understanding and working on the new research was made possible. Thanks to these researches available online, through the extracted ideas could be integrated into the current research to understand the variation in the market trends brougt by the financial crisis by considering the fluctuations in risks and returns of the company stocks.

3.1 Hypotheses development

Hypothesis is an explanation of any phenomenon whose authenticity cannot be proved. In case of scientific hypothesis, a scientific method that can be tested must be available. Hypothesis can be explained as the observations that are incurred from the past researches and experimentations whose validity cannot be proved with the current scientific theories as per research by Hilborn & Mangel (1997). The ultimate output for any hypothesis can be either accepted and proved correct or rejected by the authentic data according to Grinnell (1988). Therefore, the hypothesis is the process of studying the aims to bring the credible data in notice.

Current research includes a proposed set of hypotheses that are incurred from the past investigations that can either be accepted or rejected by the data analyzed though the inferential and descriptive statistics of the process. This hypotheses is developed individually for the three separate sub- periods of time.

With the knowledge of various research work and literature available, a hypotheses is performed over the pre-crisis, crisis period and post-crisis period, given as follows:

H1: The type of the risk involved with a stock of any company impacts its stock performance

H2: The systematic risk involved in a company affects its stock performance

H3: Unsystematic risk of a company affects its stock performance

H4: Total risk of a company affects its stock performance

H5: The value of return on the company's stock affects its performance

4 Methodology

Research methodology as explored by Saunders et al. (2009, 595), can be defined as the theory that is used for the implementation during a specific process of a specific research. This chapter focuses on explanation for the steps that are taken and the choices that are made during the implementation of this research study to make clear all the assumptions and the critical data that is beneficial to make the process understandable. Methodology is based on the past researches that have been made including the empirical part i.e. calculations and the evidences for these assumptions and data thus, collected from past work so as to prepare a trustworthy analysis for the process and the reliable results of this implementation.

4.1 Research Approaches

As per the study by Creswell (2014), the methodology includes the research theories and philosophies that are studied and applied during the work, the significant philosophies which could be applied to this research are enumerated as positivism, interpretivism, pragmatism and realism. From these philosophies, the philosophy of positivism is applied to the current research, as this is the best suitable philosophy to analyze the results, generally and in reality, such that these results are similarly applied to the similar kind of situations occurring in real life.

It is essential to use appropriate research approaches for incurring effective results according to Saunders et al. (2009, 139-140). As the purpose of the study is to examine the performance of companies' stocks and to examine its effect on the risk and return of the companies for a certain period of time, the explanatory and descriptive research approaches have been applied to this study.

According to the paper by Trochim (2006), explanatory study is mostly used when there is a requirement to characterize and define the variables involved in the research. Descriptive study is defined as the study needs to access the exact acts and events or situations that occurred, without any kind of estimations involved. Deductive approach that was applied to the study corresponds to the combination of quantitative data analysis and exploring of the relation that exists between the variables involved in the research. These variables can be analysed through the numerical data and the statistical procedures, being equally significant. A time period of 2005-2017 is covered in this research to understand the stock market performance because a certain kind of patterns is essential to be studied during a specific time period to understand the trends, according to the study by Kumar(2014, 136-138).

The quantitative research approaches are used in the study proposed by Dodd (2008). The current research also includes the statistical analysis of the relationship of the variables that further examines and presents the numerical data in the light. All these characteristics lead to the conclusion of utilizing the quantitative research approach.

Descriptive and Explanatory approaches are followed in this research in order to research efficiently and incur outputs precisely. Also, this research follows the deductive approach that is generally used along with the quantitative data for every set of testing objective theories, involved in any studies of the kind as per the research by Pearson (1997). These theories collaboratively work and explore the relationship the variables have among each other on which this study is based.

The data is extracted from the official database of the companies of both the countries. The numerical data thus gained, helps in understanding the facts and figures of the businesses in market to accurately have a glance of how the company's reputation in terms of finances varied in the stock market.

4.2 Research Methods

Quantitative Research is utilized to measure the variables that are required for developing the numerical information that needed for any research taking the study performed by Creswell (2013, 32) into consideration. The data is extracted from the annual reports and the website of the Indian and Finnish stock markets in the form of daily returns, firm risk, market risk and total risk. The risk free rate and the respective market rates are also extracted to calculate the beta, jensen alpha and sharpe ratio.

Thus, the collected data is organized in the form of tables to precisely compare the risk and return values during the research period.

4.3 Data Collection Methods

Focusing on the objectives of the thesis research, past data of various companies is studied for performing the implementation process, so as to calculate the results to formulate the end results. The type of data that is extracted from the companies is the secondary data which means the data that is gathered before the studies may be for some other purposes and is used in the current study i.e. for an entirely different research so, secondary data for 30 Indian companies listed on Bombay Stock Exchange and 15 Finnish companies enlisted on Nasdaq OMX Nordic stock exchange, has been used to conduct this research and to infer answers to the thesis objectives, which are done by performing a statistical analysis, similarly performed by Saunders et al. (2009, 600). Secondary sources from which the required information is gathered included: stock market databases and company's annual reports. The websites including the historical prices of the shares of the companies were also reviewed to retrieve the intended information.

The stock prices of the companies which are gathered then are further used to determine the calculation of the returns from these stocks. All the calculations are made for every year separately over the distinctive time periods. For calculating the stock return, the difference between closing price of the stock for the current day and previous day is divided by its closing price for previous day to find the profit earned.

$$\textit{Stock return} = (\textit{Closing price of stock}_{\textit{current day}} - \textit{Closing price of stock}_{\textit{previous day}}) \, / \, \textit{Closing Price of stock}_{\textit{previous day}}$$

(Brealey et al., 2011, 214)

All the calculations for the stocks of different companies are thus measured, so as to denote the actual variations occurred for these companies over the defined time periods. The outcomes of these calculations are hence, utilized for the further calculations with respect to the company's returns and risks with respect to study perfoemed by Zhao (2015).

Risk- free rate of return- It was found with through stock exchange websites to retrieve the results for that specific time. The Risk-free rate of return for the Indian market, is extracted from https://tradingeconomics.com/india/government-bond-yield and for the Finnish market, it is extracted from https://www.suomenpankki.fi/en/ As the government bonds usually serve as the option for the risk free rate according to (Bodie et al., 2004), so their respective rate for both countries are retrieved on yearly basis to get a fine comparison. The Risk free rate for a specific stock remains to be constant for every calculation. The annualized return is used for determining the CAPM Return.

Market return – Market return of the stocks of respective companies for various time periods is extracted through the secondary data of the company's stocks, which remains constant for the single stock of a specific company for all the calculations. Here, the annualized market rate of the stock is considered for determining the CAPM return.

Beta- Beta was calculated through the regression using SLOPE function of the Microsoft Excel with the returns of a security and market return as data. Then the value of beta for the companies hence found is utilized for the further calculations to find the systematic risk for those companies respectively.

CAPM Return- The CAPM return is calculated as adding beta times of the difference between market return and risk free rate and then adding this value to the risk free rate. This CAPM return for every stock is calculated and recorded as Risk free rate plus beta times of the excess market rate as per (Bodie et al., 2004).

Actual return- The Actual return for every stock is determined from the secondary data of the companies for certain periods of time. The annualized Actual Return is considered and the calculations are done.

Jensen Alpha- After recording the Actual return and CAPM return for every stock, the Jensen Alpha for every stock is determined, by subtracting the CAPM return from the Actual return of the stock. If the value of Jensen alpha comes out to be positive, it means the particular stock has performed better than the expected performance, if the Jensen alpha value comes out to be negative, it means, the stock has underperformed and if the value of Jensen Alpha comes to be 0, it means the stock has performed as expected. The annualised values for the stock return and market return are taken to find the CAPM Expected return, then for every company, the actual return and CAPM return are subtracted for the determination of the Jensen's alpha (ibid).

Sharpe ratio is defined as the average return earned for an investment with respect to the excess risk free rate that is imposed on the investment per every unit of the total risk involved. It can be determined by taking the difference between risk free rate of return and the Expected return and dividing the value found by standard deviation of the portfolio.

Sharpe ratio= (CAPM return- R_f) / σ_m (Brealey et al., 2011, 214)

The stock return, total risk, market risk, firm risk, jensen's alpha and sharpe ratio for the Finnish and Indian companies before and post crisis are compared for the analysis of stock performance of both countries.

4.4 Key Variables

The key variables that are considered for the implication are listed below. Here, the source of extraction of variables is listed in a tabular form along with the sources of these variables (refer table 2).

Table 2. Definition of Key Variables

Variable	Name of Variable	Source
R_{free} (Indian companies)	Risk free rate for Indian companies	bsesme.com
R_{free} (Finnish companies)	Risk free rate for Finnish companies	nasdaqomxnordic.com
$R_{security\ i}$ (Indian)	Return for Indian companies	Annual report

$R_{security\ i}$ (Finnish)	Return for Finnish companies	Annual report
R_{market} (Indian)	Indian Market return	Bombay Stock Exchange
R_{market} (Finnish)	Finnish Market return	Nasdaq OMX Nordic stock exchange
β_i (Indian companies)	Equity beta for Indian companies	Bombay Stock Exchange
β_i (Finnish companies)	Equity beta for Finnish companies	Nasdaq OMX Nordic stock exchange
σ_m (Indian)	Market SD for Indian companies	Bombay Stock Exchange
σ_m (Finnish)	Market SD for Finnish companies	Nasdaq OMX Nordic stock exchange
UnsystRisk(Indian)	Unsystematic risk for Indian companies	Bombay Stock Exchange
UnsystRisk(Finnish)	Unsystematic risk for Finnish companies	Nasdaq OMX Nordic stock exchange
SystematicRisk (Indian)	Systematic risk for Indian companies	Bombay Stock Exchange
SystematicRisk (Finnish)	Systematic risk for Finnish companies	Nasdaq OMX Nordic stock exchange
Total Risk (Indian)	Total Risk for Indian companies	Bombay Stock Exchange
Total Risk (Finnish)	Total Risk for Finnish companies	Nasdaq OMX Nordic stock exchange

4.5 Data analysis Methods

A number of different types of data analysis are used in the research so as to ensure the accurate results. The first kind of interpretation is made though the graphical interpretation, which provides the analysis for the entire set of risk variables, that includes the systematic risk and unsystematic risk variables associated with the sample of companies for the time period of 2005-2017. The analysis also presents with the returns comprised by these companies during this same period of time. The graphical interpretation has been done which is comprehensive, having the ability to achieve the research objectives of the study.

Data analysis is performed through the SPSS analysis tool. The dependant and independent variables are firstly classified and are assigned values too. Then the descriptive analysis is implemented which provides the information in concern to few variables like- mean which is the airthmetic average as per the research by William (1950, 221), median, range, variance and standard deviation, which is the mean of the values of the data set according to Bland & Altman (1996).

Regression analysis

The regression analysis is performed in order to find the beta for every stock considered for examining the returns and associated risks as per the data set of stocks.

Time series regression- The data analysis is done by the time regression series for the 30 Indian companies and 15 Finnish companies in order to find out the estimated values for beta, unsystematic risk, systematic risk and Jensen alpha and thereby calculating the CAPM estimated return and actual returns for the three sub-periods of time for a span of 2005-2017 by running the relative regressions. The stock returns are calculated for every day by considering their holding period returns and for simplification of calculations, the dividend is neglected. Then the every day's return is converted to its annual returns.

Annual return= $((1+ \text{average of daily return})^{\text{number of trading days}} – 1) * 100\%$ (Brealey et al., 2011, 214).

After computing all the stock returns and market return indices, the series of regression is undertaken to estimate the values of beta and Jensen alpha for every single stock over the determined sub-periods of time. The independent variables are taken to be the excess return of the stock's daily indices and the dependent variables are taken to be the daily excess returns of the stocks. Then, the total risk is divided into specific risk and systematic risk. As systematic risk tends to remain constant being market risk, specific risk needs to be calculated by using the following formula:

Specific risk = Variance of stock return - β_i * Variance of market return (ibid)

All these values are then taken up to examine the Jensen Alpha for the company stocks and the variations for the risks and returns are determined for every period of time.

4.6 Validity and reliability

Validity can be defined as the degree of how accurate the results of a test can be incurred, that we are intended to measure. It also denotes the trustworthiness and the credibility of the work done. For the quantitative researches, like for the type of research approach is used, the researches require both the internal as well as external validity explained by Moskal & Leydens (2000).

External validity means the degree of accuracy and evidence to which the results of this output can be utilized for the implementation on the larger size of variants. Internal validity means the degree of acceptance of the goals targeted in the starting of the process, thus, affecting each and every variable being used in the model.

For this research work, a set of strategies are used so as to ensure the validity of the results. Above all this, it is essential to choose the samples from a company precisely depending on the implementation one needs and the type of results that are intended from the research work (ibid).

In this study, a set of 15 companies are taken from Finland and 30 companies from India. The data collected from these companies represent the business fields that are required for the consistent research such that a more generalized form of results can be measured, thereby allowing the research to work well for that specific corporate sector. Further, the studies were performed in the similar fields to get assured about the validity of the study such as to avoid the vague assumptions and notation of variables.

For the accuracy in the results and focusing the internal validity, the sample of data is gathered precisely with utmost care so as to avoid any statistical errors in the observations. The data for the Indian companies is gathered from the Bombay Stock Exchange database through their website bseindia.com/ and for the Finnish companies, data is gathered from the Nasdaq OMX Nordic stock exchange database and their website nasdaqomxnordic.com, which are considered to be the reliable sources for the study. The hypotheses that is formulated, work typically well as that of the expected results of the study. Also the validity for this research process is guaranteed due to such reliable sources of information.

Reliability, defined by Saunders et al. (2009), is the capability of the research process to incur the consistent results while considering the similar data set for a similar kind of research process. The same data set must always provide the similar results in the same conditions so as to prove the reliability of the set of data, in this way other researchers working with the similar research under the similar conditions must always provide with the justifiable results. The variables corresponding to other researches can be varied accordingly and the outputs thus generated would be incurred according to these data inputs relative to the similar kind of research and under the similar circumstances, provided a small part of the information can be slightly scaled to determine the estimated influence to be showed up significantly. All the strategies for the examination and the exploration results justifies every reader with the objective of making this research helpful for other researchers working in the same field, so, the research process is considered to be reliable for the further proceedings.

For this study, the data of 45 companies are taken into consideration, out of which 75% belong to India listed at Bombay Stock Exchange and 25% belong to Finland listed at Nasdaq OMX Nordic (Figure 1), so as to determine the risks and returns associated with the companies before, during and after crisis.

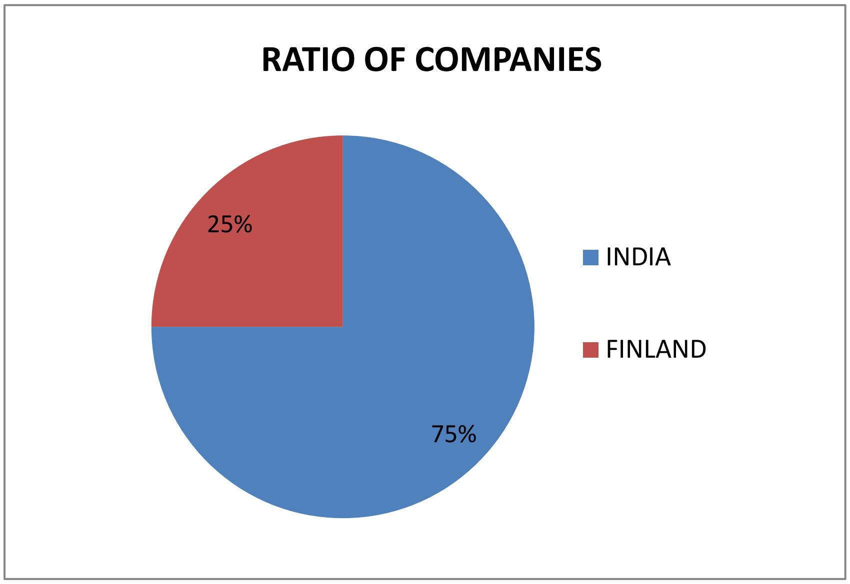

Figure 1. Ratio of Companies for specific countries taken for the studies

5 Empirical findings

This chapter includes the empirical findings of the research undertaken, that is done though the descriptive statistics and graphical analysis, which then forms the conclusions for the study. Firstly, the analysis for the variables associated with returns and risks is represented visually for the given research periods. Then, the descriptive statistics analysis is done for the subsequent three periods: before, during, after crisis and overall time period. The stock returns of 45 companies form the data set including the 15 Finnish companies and 30 Indian companies that are listed on their specified stock exchanges.

5.1 Graphical analysis

The secondary data extracted from the companies' databases, annual reports and trustworthy websites, is then examined over the period of 2005-2017. Visual representation of these variables can be clearly seen in the graphs (Figure 2 and Figure 3). In this research, visual graphs for the average stock returns and risks associated with the 30 Indian companies and average stock returns, risks associated with the 15 Finnish companies are represented during this period of research. These graphs are clearly visible by determining the definite market trends followed by the companies. The graphs for the Indian and Finnish companies represent the variation of risk and return of their stocks. The risk variations are depicted in the form of market risk which is specifically systematic risk, the firm risk which is specifically unsystematic risk and total risk during the research period. Also, the stock return of these companies kept on varying over this defined period of time. All these variations are represented in graphs- 'Indian companies' risk and return', 'Finnish companies' risk and return'.

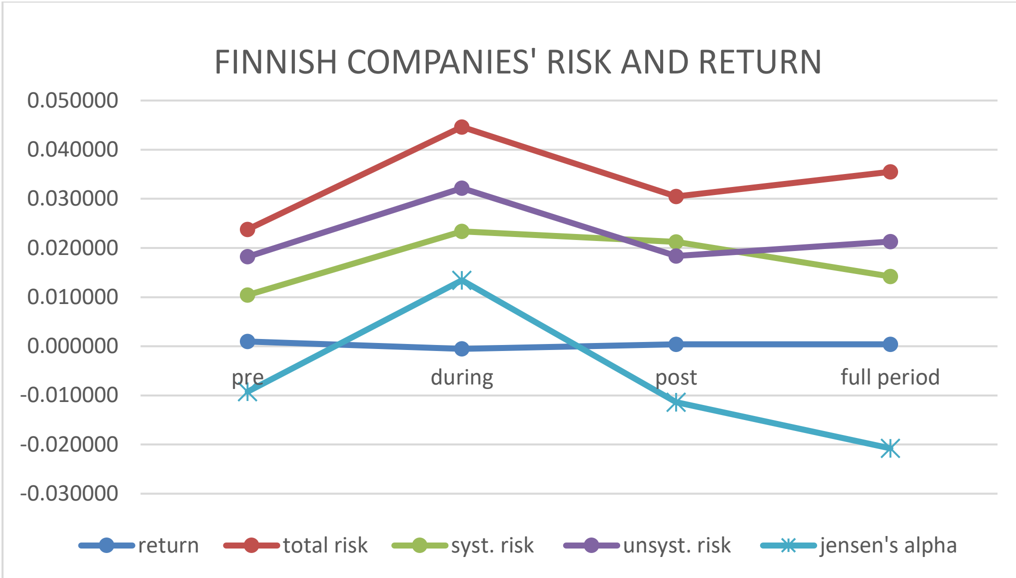

Figure 2. Risk and Return variations for the Finnish companies' stocks

Figure 2 shows how the Finnish companies stocks' return changed over the period of time. The average of the stock returns had fallen down significantly and moved towards the zero and then to negative values during crisis, comparinfg to the average of companies' stocks during the pre-crisis, which had been a bit higher than zero towards the positive side and post crisis period for which it had been near to zero, that eventually led to a nearly constant values near to zero for the full period of research.

The systematic risk had been showing a constant variation during whole period, thereby taking a start at nearly 0.010000 during the pre-crisis period, which rose up to slightly greater than 0.020000 during the crisis period, which fall down a bit than its value during crisis period and ultimately when found for the value of systematic risk during full period of research, it had fallen down to nearly 0.015. The average unsystematic risk for the 15 Finnish companies showed up a value slightly lower than 0.020000 for the pre-crisis period, the value shoot up instantly to nearly 0.030000 during the crisis period, which steeply fall down to a value little lower than 0.020000 during the post crisis period, which can be evident from the fact that the crisis period had been slowly leaving its adverse effects behind during the post crisis span of time. The average value of unsystematic risk for the full period of time can be defined to be nearly 0.020000. The total risk, being a sum of systematic risk and unsystematic risk, tends to define a variation similar to unsystematic risk, whose ratio in defining the total risk is much higher than the systematic risk. Thus, the total risk varied following the similar trends as the unsystematic risk during the three sub-periods of time and thus for the full period too. The total risk for pre-crisis period had been somewhat near to 0.025000, which rose up sharply to a value of nearly 0.045000 during crisis, which fall down to 0.030000 for the post crisis and full duration, it had been nearly 0.035000.

The Jensen's alpha being the performance measure for the company's stocks, defines the variation showed by the Finnish and Indian companies during the sub-periods of time. The positive values showed good performance while the negative ones show the bad performance.

While observing the graph for the Finnish companies' stocks, it is significant that the average of 15 Finnish stocks had been performing well during the pre crisis tenure, that gave rise to the better performance for the average of stocks for crisis tenure, which means the companies' stocks had performed better than the expectations during crisis tenure but the performance started to decline for the post crisis tenure and eventually for full period, the performance remained worse.

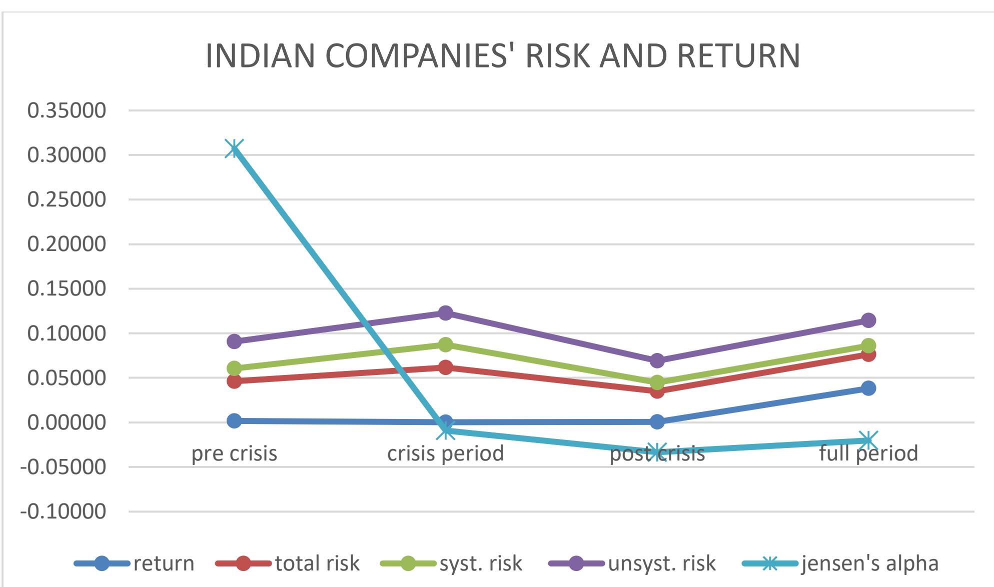

Figure 3. Risk and Return variations for the Indian companies’ stocks

The line graph (refer to Figure 3) for the average stock returns and risk measures for the Indian companies' stocks during the three sub-periods of time and for the full period of research time. The stock returns for the companies fall down sharply to zero during crisis while comparing to the pre-crisis span of time. The stock returns became slightly better after crisis. The stock returns for three periods turned out to be positive values and thus, for the full period of time, the returns had been slightly lesser to the value of 0.05000.

The average systematic risk for the sub-period remained in between 0.05000 and 0.10000, with value slightly higher than 0.05000 for the pre-crisis period, which then shoot up to nearly 0.07500 for the crisis period. The systematic risk started to lower down a bit during the post crisis period and came back to a value slightly higher than 0.05000. Also, for the full period of time, the value of systematic risk had remained to be exactly between 0.05000 and 0.10000. The average of unsystematic risk for the Indian stocks for the pre-crisis period had been slightly lower than 0.10000, which then rose up sharply to a measure of nearly 0.12500 for the 'during crisis' period, which then came down to nearly 0.07500 for the post crisis period, that eventually summed up to a value near to 0.012500 for the full period of time. The average total risk for the Indian companies tends to vary according to the unsystematic risk for these stocks during the sub-periods. The measure of total risk had been slightly lesser than 0.05000 during the pre-crisis period, which rose a little to a measure of slightly higher than 0.05000 during the crisis period. The measure of total risk had become slightly lower than 0.05000 for the post crisis period that eventually gave rise to a value near to 0.07500 for the full period of time.

The Jensen's alpha measured the performance of the stocks. Its average value for the Indian stocks had been much higher during pre crisis tenure, which means a great performance of the companies before the crisis. The Jensen's alpha showed negative values for the span of crisis and after crisis, which means the average Indian companies' stocks had performed worse than the expectations during crisis and even after it was over. Also, these variations had led to a underperformance experience for more of the Indian companies' stocks.

The average measures of the stock returns, risks and the performance analysis benchmark- Jensen's Alpha, have given a clear idea about the performance of these 45 companies' data set, that ultimately shows the variations in the returns and risks during the three sub-periods of time and for the full tenure of research.

5.2 Descriptive Statistics Analysis

The descriptive statistics analysis is done by considering the statistics for the variables- stock return, systematic risk, jensen alpha i.e. variation in the actual expected risk, unsystematic risk, sharpe value and total risk are considered for 15 Finnish companies and 30 Indian companies i.e. the data of a total of 45 companies is taken and these are evaluated for the fair comparison of the performance of the Indian and Finnish companies during the pre-crisis(2005-2007), crisis tenure(2008-2009), post crisis(2010-2017) and for the full period i.e. from 2005-2017 is done.

Risk-free rate of return R_{free} for Finnish companies remains to be a constant value of 0.25% for every company as all the 15 companies perform in the single market and for Indian companies, it is 8.00%.

Market rate of return R_{market} for the Finnish market remains to be a constant value of 0.000641762, as the companies from a single market are being considered. These values taken are then annualized so as to make a fair comparison with the annualized stock return. The annualized value for Fiinish market is 17.55% and for the Indian market, this value also remains to be a constant value of 0.000381669 being daily average and 10.09% being its annualized value.

The descriptive statistics analysis of the stock returns, total risk, beta and Jensen Alpha is done over the three sub-tenures and the full tenure to compare the stock performance of the Indian and Finnish companies. For practical implementation, the 5% significance factor is commonly used as the standard error because the value gets decreased for the huge data set. For this type of research work, a standard significance factor is set to be 1%. For the implementation of this study, the significance factor with value 1%, 5% and 10% are considered. The following table depicts the descriptive statistics for the stock returns during three sub-tenures of research to compare the variations in stock returns for the Finnish companies.

Measures of Stock return

The stock return for the 45 companies' data set has been evaluated during the research periods.

Table 3. Measures of Stock return for the Finnish stocks

Stock return	*Pre-crisis*	*During crisis*	*Post- crisis*	*Full- period*
Mean	0.297086	-0.00052837	0.000397152	0.000388093
Standard Error	0.066706	0.000198606	0.000075078	0.000055837
Median	0.255333	-0.00068018	0.000458806	0.000395239
Standard Deviation	0.258353	0.0007692	0.000290778	0.000216255
Sample Variance	0.066746	5.91668E-07	8.45517E-08	4.67663E-08
Kurtosis	0.180719	-0.51884572	-0.97920704	-0.2936619
Skewness	0.714071	0.388833524	-0.32386553	-0.18294576
Range	0.922591	0.002622945	0.000888389	0.000761702
Minimum	-0.1289	-0.00159545	-7.77E-05	-9.987E-06
Maximum	0.793688	0.001027494	0.000810689	0.000751715
Sum	4.456294	-0.00792558	0.005957274	0.005821395
Count	15	15	15	15

The set of 15 Finnish companies (refer table 3) tend to show the following trends during three tenures of time. In table, this is well evident that the mean value of the stock return for the 15 Finnish company stocks falls down sharply during the crisis tenure and touched a comparatively lower value of -0.00052837 as compared to the stock return during pre-crisis tenure, which was 0.297086, that generously fall down to 0.000397152 after crisis and 0.000388093 when compared for the full tenure of 2005-2017. Thus, the mean stock was higher for the crisis tenure that eventually fall down due to financial crisis. The positive value of skewness for the pre-crisis tenure shows a right skewed stock return variation, which means the difference from the normal distribution was positive, which became lesser during the crisis tenure that ultimately became a negative value for the span of crisis and hence, became left skewed. The skewness of the stocks remained to be negative and hence left skewed for the full tenure of time. The value of kurtosis came out to be positive and remained so for pre-crisis tenure, which means the heavy tails or outliers. The value of kurtosis for the Finnish stock returns became negative for the span of crisis and post crisis tenure, which ultimately gave rise to the negative entities for the full tenure also. The minimum values for the stock returns became exponentially low for the post crisis tenure and overall span of time.

Table 4. Measures of stock return for the Indian stocks

Stock return	*Pre-crisis*	*During crisis*	*Post-crisis*	*Full period*
Mean	0.001526634	0.00025879	0.000760959	0.000856187
Standard Error	0.000195861	0.00015715	0.000096	0.0000623
Median	0.001588544	0.00043894	0.000628878	0.000872991
Standard Deviation	0.001072778	0.00086072	0.000525982	0.000341187
Sample Variance	1.15085E-06	7.4084E-07	2.76657E-07	1.16408E-07
Kurtosis	0.70832765	-0.43573259	-0.566571946	-0.464475076
Skewness	0.556794603	-0.17235059	0.050918254	0.157181644

Range	0.004912573	0.00351972	0.001977098	0.001356955
Minimum	-0.000423143	-0.00138425	-0.000233719	0.000267636
Maximum	0.00448943	0.00213547	0.001743379	0.001624591
Sum	0.045799026	0.00776366	0.022828776	0.025685598
Count	30	30	30	30

For the 30 Indian companies, the mean of stock return remained to be positive throughout, though the stock return fell down during the crisis tenure, which became lesser for post crisis tenure as compared to the span of pre-crisis, but eventually, the stocks did not fall to the negative values (refer table 4). The minimum stock return value was -0.000233719 for post- crisis tenure and the maximum value was 0.00448943 for the pre-crisis tenure. The kurtosis showed a positive value for the pre-crisis duration only, which depicted the heavy tail or outliers and for the remaining tenures of time it showed negative value, rising to the less extreme stock returns with respect to the normal distribution. The skewness of the 30 Indian stocks showed a positive value throughout, except for the span of crisis, though it remained fluctuating from maximum deviation from the normal distribution for the other tenures of time.

From the mean of 45 stocks from both countries, it is evident that the stock returns generously fall down for the span of crisis as compared to the pre-crisis tenure, which had a significant effect also for the post crisis duration and the full tenure. The stock returns remained deviating from the intended normal distribution and the extreme values kept on fluctuating too, which ultimately, impacted the stock returns.

Measures of Systematic risk

Systematic risk for Finnish companies remained to be constant as it is standard deviation for the Finnish market and its every company is taken from a single market so this value remains to be constant during every tenure of time and it is 0.010425681. Also, the Systematic risk for Indian companies remains to be constant as it is standard deviation for the Indian market so this value remains to be constant during every tenure of time and it is 0.009801081. These values affected both markets individually and the systematic risk had an overall effect on the stocks too.

Measures of Unsystematic risk

The unsystematic risk for the 45 company stocks are compared over the research periods.

Table 5. Measures of Unsystematic risk for the Finnish stocks

Unsystematic risk	*Pre-crisis*	*During crisis*	*Post-crisis*	*full period*
Mean	0.018218108	0.032165661	0.018386662	0.021316
Standard Error	0.00134782	0.001464283	0.001028012	0.000817
Median	0.01794773	0.030694741	0.017393002	0.020600
Mode	#N/A	#N/A	#N/A	#N/A
Standard Deviation	0.005220085	0.005671143	0.003981472	0.003166
Sample Variance	2.72493E-05	3.21619E-05	1.58521E-05	1E-05
Kurtosis	4.173490268	1.022290055	0.141023895	-0.84706
Skewness	1.646574242	1.080698624	0.914821325	0.503381
Range	0.021313815	0.020057991	0.013516254	0.010407
Minimum	0.011825042	0.026028971	0.013065163	0.016976

Maximum	0.033138857	0.046086961	0.026581416	0.027384
Sum	0.273271623	0.482484919	0.275799924	0.319741
Count	15	15	15	15

The unsystematic risk associated with the company stocks of 45 companies is compared to conclude the variations of the firm risks during the specified periods of time. For the 15 Finnish stocks, the mean of the unsystematic risk remained to be higher for the span of crisis with value 0.032165661, which was lesser for the pre-crisis term and the post crisis term, which eventually, led to a slightly higher value than its value during pre-crisis term (refer table 5). The standard deviation showed a fall for the post crisis term and for the full period. The Variance of the 15 stocks depicted the highest value for the span of crisis, being the most sensitive period. The kurtosis remained to be positive for the pre-crisis term, post crisis term and for the span of crisis, but it became negative for the overall tenure, resulting in a less extreme tails than the normal distribution. The skewness was defined to be positive for every period of time, which means the unsystematic risk values had been right skewed. The minimum value came up to be for the pre-crisis period and the maximum unsystematic risk for the stocks was for the span of crisis.

Table 6. Measure of the Unsystematic risk for the Indian stocks

unsystematic risk	*Pre- crisis*	*during crisis*	*Post- crisis*	*full period*
Mean	0.030191327	0.035541173	0.024416	0.028381
Standard Error	0.001519458	0.001280667	0.001032	0.000821
Median	0.030137987	0.034604155	0.024073	0.028091
Standard Deviation	0.008322413	0.007014505	0.005651	0.004497
Sample Variance	6.92626E-05	4.92033E-05	3.19E-05	2.02E-05

Kurtosis	-0.962427295	0.536479786	0.290643	0.989901
Skewness	0.283373653	0.508797453	0.027926	0.482162
Range	0.02963211	0.029172503	0.02717	0.022169
Minimum	0.016745094	0.02196118	0.01087	0.018814
Maximum	0.046377205	0.051133683	0.03804	0.040983
Sum	0.905739822	1.066235203	0.732487	0.851424
Count	30	30	30	30

The mean of the unsystematic risk for the 30 Indian stocks was highest for the span of crisis with value 0.035541173 (see table 6). There remained negative kurtosis for the term of pre- crisis, which means the less extreme than the tails of the distribution, which otherwise remained to be positive for the other periods of time. The skewness depicted the highest value for span of crisis, which means the maximum deviation from the normal distribution could be seen for the span of crisis and minimum was for the duration of post crisis. The maximum value for the unsystematic risk could be seen for the term of crisis and minimum for the duration of post crisis.

The data set of 45 stocks determined the variations of the unsystematic risk for the stocks, which gave the similar interpretation of the unsystematic risk being highest for the crisis term, which can be determined by the fact that the crisis term had adversely affected the companies in the market. The conditions became a little more stable after the crisis and the full tenure than the crisis term.

Measures of Total risk

The total risk for the 45 company stocks are compared over the research periods.

Table 7. Measures of total risk for the Finnish stocks

Total risk	*Pre-crisis*	*During crisis*	*Post-crisis*	*Full period*
Mean	0.023778471	0.04462955	0.03050895	0.03551882
Standard Error	0.002251267	0.00404015	0.00102801	0.00081734
Median	0.023886514	0.04940242	0.02951529	0.03479979
Standard Deviation	0.00871912	0.01564745	0.00398147	0.00316556
Sample Variance	7.60E-05	0.00024484	1.5852E-05	1.0021E-05
Kurtosis	0.246166929	-1.7728578	0.1410239	-0.8484117
Skewness	0.668087546	0.0851464	0.91482133	0.50047342
Range	0.031739496	0.04307203	0.01351625	0.01040733
Minimum	0.011825042	0.02638838	0.02518745	0.03117628
Maximum	0.043564538	0.06946041	0.0387037	0.04158361
Sum	0.35667707	0.66944321	0.45763422	0.53278223
Count	15	15	15	15

The total risk mainly depends on the unsystematic risk as the systematic risk remains to be constant for the single market. The total risk for the data set of 15 Finnish company stocks is shown in the table 7. The mean value of the total risk tends to be highest for the crisis period with value 0.04462955. The variance of the sample for the total risk became higher for the crisis period and the standard deviation showed up to be maximized for the crisis period as compared to the other periods of time. The kurtosis value tends to be negative for the crisis period and eventually for the full period being considered. The skewness remained to be positive for every period of time and thus showed to be right skewed from the normal distribution. The maximum total risk was for the span of crisis and it was minimum for the term of pre-crisis.

Table 8. Measure of total risk for the Indian stocks

Total risk	*Pre- crisis*	*During crisis*	*Post crisis*	*Full tenure*
Mean	0.044534255	0.06124	0.03421731	0.038181897
Standard Error	0.001519458	0.00128	0.001031716	0.000794178
Median	0.044480915	0.0603	0.033874462	0.038005906
Standard Deviation	0.008322413	0.0070	0.00565094	0.0044217
Sample Variance	6.92626E-05	4.9E-05	3.19331E-05	1.95523E-05
Kurtosis	-0.96242729	0.53648	0.290643451	1.120421154
Skewness	0.283373653	0.5088	0.027926007	0.489276817
Range	0.02963211	0.02917	0.027169876	0.022168913
Minimum	0.031088022	0.04766	0.020670929	0.02861511
Maximum	0.060720132	0.07683	0.047840806	0.050784023
Sum	1.336027646	1.8371	1.026519309	1.183638806
Count	30	30	30	30

The mean of total risk for the 30 Indian stocks remained maximized during the crisis period with value 0.06124 as compared for the pr-crisis or post crisis period, thereby imparting a lesser value to the full period as well (see table 8). The variance of the sample of 30 Indian stocks had been exponentially low during all three periods. The kurtosis remained positive for post crisis period and during crisis, which meant the more extreme values than the tails of normal distribution and the negative kurtosis had been there for the pre- crisis period, which means the less extreme than the tails of the distribution. The skewness showed the positive values for every period of time that means the right skewed values for the pre-crisis duration, for the span of crisis and the post crisis tenure, which ultimately led to right skewness for the full tenure as well. The minimum total risk relied within the post crisis tenure and maximum within the span of crisis.

The set of 45 companies tend to give results about total risk being strictly dependent on the unsystematic risk and the total risk being generously higher for the span of crisis while comparing it for the pre-crisis term and the duration of post crisis, which ultimately affected its value for the full tenure of the research.

Measures of Beta

The beta for the 45 company stocks are compared over the research period.

Table 9. Measure of beta for Finnish stocks

Beta	*Pre-crisis*	*During crisis*	*Post-crisis*	*Full tenure*
Mean	0.236114109	0.024786085	0.0005526	0.054019781
Standard Error	0.044997633	0.017403231	0.00697669	0.008862065
Median	0.216000273	-0.00651669	0.002493731	0.049611669
Standard Deviation	0.174275084	0.067402426	0.027020604	0.03432263

Sample Variance	0.030371805	0.004543087	0.000730113	0.001178043
Kurtosis	-0.747845877	-0.83306982	-1.123583503	0.158749434
Skewness	0.160975229	0.762289241	0.131183281	0.398309137
Range	0.585072432	0.208168881	0.07976853	0.1289029
Minimum	-0.018401266	-0.06069018	-0.036417135	-0.00221923
Maximum	0.566671167	0.147478698	0.043351395	0.12668367
Sum	3.541711641	0.371791282	0.008288997	0.81029672
Count	15	15	15	15

Table 9 shows the beta variations for the 15 Finnish stocks. The values had been highest for the pre-crisis term, 0.236114109 while comparing to the span of crisis and after crisis. The standard deviation and the variance for the sample data set were highest during pre-crisis term. Beta varied from 0.1289029 for the full tenure and 0.585072432 during the pre-crisis. The kurtosis value remained positive during the pre-crisis and for the full tenure, defining the heavy tail compared to the other tails of the distribution, which was negative during crisis and post crisis, depicting the less extreme than the other tails of the distribution. The skewness varied for the maximum positive value during crisis and the minimum during post crisis term, depicting the right skewed values for every period of time, but highest during the span of crisis. The beta had been minimum for the full tenure and maximum during pre-crisis term.

Table 10. Measure of beta for the Indian stocks

Beta	*Pre-crisis*	*During crisis*	*Post crisis*	*Full tenure*
Mean	0.599687632	0.600377	0.861444245	0.452048

Standard Error	0.089781673	0.07461	0.065628057	0.023899
Median	0.665453317	0.633964	0.802009344	0.408067
Mode	0.160187003	0.617397	0.705653431	0.492513
Standard Deviation	0.491754475	0.408655	0.359459672	0.1309
Sample Variance	0.241822464	0.166999	0.129211256	0.017135
Kurtosis	-1.292909599	-0.03658	-0.305712105	0.087271
Skewness	0.021310213	0.082138	0.549639882	0.439467
Range	1.646924245	1.658065	1.391468416	0.568266
Minimum	-0.148422111	-0.03704	0.295055304	0.215818
Maximum	1.498502134	1.621027	1.686523719	0.784084
Sum	17.99062895	18.0113	25.84332734	13.56145
Count	30	30	30	30

The mean of the data set of 30 Indian stocks gave the maximum value of the beta coefficient 0.861444245 for the post-crisis period (table 10). The standard deviation and the variance showed maximum values for the term of pre-crisis. The kurtosis showed the negative values for all the three- periods of the time and thus, the data is less extreme with respect to the tails of normal distribution. The skewness had the positive values for all the periods of time and hence, the beta coefficient remained to be right skewed for the three- periods of time.

If the beta coefficient shows up the negative values then the relationship between dependent and independent variable would be negative too and if beta coefficient be positive then the relationship is positive too. On comparing the beta for the 45 stocks, the Finnish stocks showed the maximized mean of the beta for the pre-crisis term while the Indian stocks showed the maximum mean of the beta to be validated for the post-crisis period.

Measures of Jensen's Alpha

The Jensen's alpha for the 45 company stocks are compared over the research period.

Table 11. Measure of Jensen alpha for Finnish stocks

Jensen Alpha	*Pre- crisis*	*During crisis*	*Post crisis*	*Full crisis*
Mean	-0.09252057	0.013428419	-0.011361915	-0.020771296
Standard Error	0.062715599	0.046331773	0.020503523	0.015174955
Median	-0.079857664	0.063889833	-0.026987645	-0.024385942
Standard Deviation	0.242896469	0.179442186	0.079409803	0.058772347
Sample Variance	0.058998695	0.032199498	0.006305917	0.003454189
Kurtosis	0.06921646	0.336410628	-1.023803342	-0.316549736
Skewness	-0.307200792	-0.818472941	0.217953187	0.130041793
Range	0.883593645	0.637258879	0.240522005	0.203828527
Minimum	-0.520193082	-0.399464996	-0.127581879	-0.119428526
Maximum	0.363400562	0.237793883	0.112940127	0.0844

Sum	-1.387808548	0.201426291	-0.170428724	-0.311569447
Count	15	15	15	15

Table 11 depicts that the mean value of the Jensen alpha was found to be negative over pre crisis term of the 15 Finnish stocks, which means the company stocks had underperformed than the expectations over pre crisis term, the positive values of Jensen alpha showed the better performance than the expectations for the span of crisis and the negative, means underperformance during the post-crisis tenure, which ultimately rose up to negative values for the full tenure and eventually, underperformance of the 15 stocks for the research period. The standard deviation of the Jensen alpha was found to be highest for the duration of pre-crisis and lowest over full tenure. The variance of the sample of 15 stocks was found to be highest over pre-crisis and lowest over the post-crisis tenure. The kurtosis showed the positive value over pre-crisis and for the span of crisis but negative over post crisis for the Jensen alpha being less extreme than the tails of the normal distribution.

Table 12. Measure of Jensen alpha of Indian stocks

Jensen's Alpha	*Pre-crisis*	*During crisis*	*Post crisis*	*Full period*
Mean	0.24667629	-0.0451432	0.018036623	0.00946483
Standard Error	0.03693091	0.00561001	0.001374098	0.000500388

Median	0.27372844	-0.0476686	0.016792196	0.008543957
Mode	0.06589153	-0.046423	0.014774729	0.010312063
Standard Deviation	0.20227893	0.03072732	0.007526243	0.00274074
Sample Variance	0.04091677	0.00094417	5.66443E-05	7.51165E-06
Kurtosis	-1.2929096	-0.0365802	-0.305712105	0.087270806
Skewness	0.02131021	-0.0821379	0.549639882	0.43946745
Range	0.67744797	0.12467222	0.029134087	0.011898168
Minimum	-0.0610521	-0.1218873	0.006177766	0.004518721
Maximum	0.61639583	0.00278488	0.035311853	0.016416889
Sum	7.40028884	-1.3542951	0.541098692	0.283944888
Count	30	30	30	30

The positive values of Jensen alpha showed the over performance of the stocks and the negative showed their underperformance. The mean for the Jensen alpha during the pre-crisis period had been positive which mean better performance, which became negative for the crisis period, thereby depicting the underperformance of the stocks during the crisis period, which again became positive for the post crisis period, hence, eventually, positive for the full-period i.e. the stocks of 30 Indian companies had performed better than the expectations for the post crisis and hence, the full period too (refer to table 12). The kurtosis had shown the negative values for the three periods of research and the skewness had been positive for the pre crisis, means the right skewed over pre-crisis term, negative value of the skewness during the span of crisis, depicting left skewed and again positive over the post crisis tenure.

The positive values of Jensen alpha depicted the better performance of the stocks than expectations and negative value of Jensen alpha signifies the underperformance of the stocks. For the set of 45 stocks, these have performed better mostly over the pre-crisis tenure than comparing to span of crisis and post crisis counter periods.

Descriptive analysis of Risk and Return over periods of time

The risk and return analysis and its relationship can be well understood by comparing the risk and returns of the stocks of a market over the specific periods of time. Descriptive analysis of the risk and returns for the research periods are depicted as:

Pre-crisis

For the pre-crisis determination of the descriptive statistics analysis, the variables- stock return, systematic risk, jensen alpha i.e. variation in the actual expected risk, unsystematic risk, sharpe value and total risk are considered for 15 Finnish companies and 30 Indian companies i.e. the data of a total of 45 companies is taken and these are evaluated for the fair comparison of the performance of the Indian and Finnish companies during the pre-crisis (2005-2007).

Table 13. Measures of Risk and Return for Indian and Finnish companies for pre-crisis

Year (2005-2007)	*Indian stocks*	*Finnish stocks*
Stock Return	0.001526634	0.297086
Total Risk	0.044534255	0.023778471
Market Risk (Systematic)	0.009801081	0.010425681
Firm Risk (Unsystematic)	0.030191327	0.018218108
Jensen’s Alpha	0.24667629	-0.09252057

Sharpe Ratio	0.691	1.14025

The returns for the Indian stocks for the duration of pre-crisis period had been significantly lesser than the Finnish stocks during relative period (refer table 13). The total risk values for the Indian market had been higher than the Finnish companies. The market risk i.e. the systematic risk always remains to be constant for a single market so remains same for the specifically Indian market and Finnish market. On comparing the systematic risk for both countries, the value is higher for the Finnish market and unsystematic risk showed up the higher measure for the Indian companies. The Jensen alpha for the Indian stocks over the pre crisis pre-crisis term had been positive, that means the 30 Indian stocks considered had performed better than the expectations than the 15 Finnish stocks which had performed worse than the expectations over pre-crisis tenure. The sharpe ratio for the Finnish companies had shown the higher values on comparing with the Indian counter- part, with both ratios being positive.

During crisis

For the during crisis period determination of the descriptive statistics analysis, the variables- stock return, systematic risk, jensen alpha i.e. variation in the actual expected risk, unsystematic risk, sharpe value and total risk are considered for 15 Finnish companies and 30 Indian companies i.e. the data of a total of 45 companies is taken and these are evaluated for the fair comparison of the performance of the Indian and Finnish companies during the crisis period(2008-2009).

Table 14. Measures of Risk and Return for Indian and Finnish companies for the span of crisis

Year (2008-2009)	*Indian stocks*	*Finnish stocks*
Stock Return	0.00025879	-0.00052837
Total Risk	0.06124	0.04462955

Market Risk (Systematic)	0.009801081	0.010425681
Firm Risk (Unsystematic)	0.035541173	0.032165661
Jensen’s Alpha	-0.0451432	0.013428419
Sharpe Ratio	0.691	1.14025

The mean of the stock returns for the Indian stocks are compared with the Finnish companies, which gave an insight of stock returns being better for the Indian companies as compared to the Finnish companies (see table 14). The total risk had been greater with respect to Indian stocks over the span of crisis while comparing to the Finnish stocks. The market risk i.e. systematic risk remained constant for the specific markets. The unsystematic risk had been slightly on higher side for the Indian stocks as compared to the Finnish stocks. The Jensen alpha being the benchmark for accessing the performance of the stocks, gave the negative value for the Indian companies, thereby giving an insight of underperformance of the Indian companies over the span of crisis while comparing with the Finnish companies, that had performed a little better than the Indian companies for the specific period of crisis. The sharpe ratio showed the higher value for the Finnish companies, defining the more attractive risk-adjusted return of the stocks.

Post crisis

For the post-crisis determination of the descriptive statistics analysis, the variables - stock return, systematic risk, jensen alpha i.e. variation in the actual expected risk, unsystematic risk, sharpe value and total risk are taken and these are evaluated for the fair comparison of the performance of the Indian and Finnish companies during the post-crisis(2010-2017).

Table 15. Measures of Risk and Return for the post crisis term

Year (2010-2017)	*Indian stocks*	*Finnish stocks*
Stock Return	0.000760959	0.000397152
Total Risk	0.03421731	0.03050895
Market Risk (Systematic)	0.009801081	0.010425681
Firm Risk (Unsystematic)	0.024416	0.018386662
Jensen’s Alpha	0.018036623	-0.011361915
Sharpe Ratio	0.691	1.14025

The risk and return measures of the Indian and Finnish companies showed the positive returns, with the stock return of the Indian companies being a little better than the Finnish companies and total risk involved in the market being slightly higher for the Indian companies for the post crisis period (see table 15). The systematic risk being a constant for the specific markets, had not much effect on the stock returns. The unsystematic risk being the major part of the risk involved during calculating the returns and risks, had a significant contribution to the total risk. Its value remained higher for the Indian stocks as compared to Finnish stocks over the post crisis term. The Jensen alpha for the Indian companies for the post crisis period had been greater than for the Finnish companies. The 30 set of stocks of Indian companies had performed better than the expectations in the market and the 15 Finnish stocks had underperformed during the post-crisis period. The sharpe ratio being much higher for the Indian markets had a greater risk-adjusted returns.

Full period

For the determination of the descriptive statistics analysis for the full period i.e. 2005-2017, the variables- stock return, systematic risk, jensen alpha i.e. variation in the actual expected risk, unsystematic risk, sharpe value and total risk are considered for the 45 companies is taken to evaluate the stock performance of these companies.

Table 16. Measures of Risk and Return for the full period

Year (2005-2017)	*Indian stocks*	*Finnish stocks*
Stock Return	0.000856187	0.000388093
Total Risk	0.038181897	0.03551882
Market Risk (Systematic)	0.009801081	0.010425681
Firm Risk (Unsystematic)	0.028381	0.021316
Jensen's Alpha	0.00946483	-0.020771296
Sharpe Ratio	0.691	1.69826

The stock returns for the full period of the research showed slightly greater returns for the 30 Indian companies as compared to the 15 Finnish companies. Also, on a comparative note for the risks and returns, the total risk involved in the Indian market had been slightly greater than the total risk involved within the Finnish markets and hence for the Finnish stocks (see table 16). The systematic risk being a constant for the specific markets, had no significant effect on the performance of the companies' stocks and only unsystematic risk had a significant impact on the stocks' performance, with its value to be slightly higher for the Indian stocks than the Finnish stocks. The Jensen alpha for Indian stocks had a positive value for the full term, which means superperformance of the companies' stocks while the Finnish company stocks' had an average negative value, which means these stocks had underperformed during the full period in its market. The sharpe ratio for the Indian companies remains to be much higher than the sharpe ratio with respect to Finnish companies for full tenure.

6 Conclusions and Discussion

In order to validate the assumptions made during the starting of this research process, data has been collected from reliable sources, a series of operations have been performed and their results have been verified for its authenticity with the trustworthy set of tests undertaken, so as to come to a conclusion of whether this practice implementation meets the objectives of the research, qualify for their validation, thereby taking into account all sorts of authentic data, areas and the situations.

To clarify the outcomes of the research work undertaken here, a summary of the research process hence performed is presented in the final section that concludes the study in the form of a summary that presents with the answers to the questions of the thesis and the testing of the hypotheses presented before. This section also includes the explanation for the practical implementation in order to understand their results so as to know about the limitations of the work left during the research process. Also, a few of the suggestions which matter in this concern so as to improvise the research work in future are also represented.

6.1 Summary of key findings

A various kinds of theoretical and empirical analysis is made to acheive the research objectives of the study. Considering the research questions of the research , these can now be answered really well by looking at the practical implications of the study.

1. How does the firm level return change over time?

The firm level return tends to vary over the specified sub-periods of time. This is evident from the descriptive statistics analysis that focusses on the stock return values for a set of 45 companies to correspond its variations over the term of pre-crisis, for the span of crisis and over the post crisis tenure. Also, the ful tenure of the research is considered for the depiction. The mean of stock returns for the 15 Finnish stocks over the pre-crisis tenure is 0.297086, which decreases over the span of crisis to a negative figure of -0.00052837, then rose a little to a figure of 0.000397152 over the post-crisis tenure but eventually remained lesser than for the term of pre-crisis. The mean of stock returns for the 30 Indian stocks for the pre-crisis tenure is 0.001526634, which decreases over the span of crisis to 0.00025879, then rose a little to 0.000760959 over the term of post-crisis but eventually remained lesser than that for term of pre-crisis. The returns of the stocks had generously fallen down over the span of crisis as compared to the tenure of pre-crisis and affected the returns over post-crisis tenure too.

2. How does the firm level risk change over time?
    a) How does the firm level systematic risk change over time?
    b) How does the firm level unsystematic risk change over time?

The firm level risk tends to change over the period of time. This can be evident from the descriptive and visual analysis over the before crisis term, crisis term and post crisis term. Also, the full period of time is considered to specify the variation of the unsystematic risk. The sytematic risk is the market risk associated with the market from which the companies are conisdered, which remains to be constant for the Finnish companies and Indian companies respectively. The systematic risk for the Finnish and Indian companies did not change over time for their respective periods and markets. The unsystematic risk had been highest for the duration of crisis, which can be determined by the fact that the tenure of crisis had adversely affected the companies in the market, as compared to the duration of pre crisis and post crisis. The total risk had been generously higher for span of crisis as compared to the tenure of pre-crisis and for the span of post crisis. Thus, the unsystematic risk and thus, the total risk tends to change during the research periods.

3. How does the firm level Jensen's alpha change overtime?

The Jensen's Alpha is the comparative factor for detrmining the higher performance or the under performance of the company stocks as per the expected performance. The Jensen's Alpha for the 45 company stocks represents the variations during these sub-periods, which is evident from the descriptive analysis of the Jensen's Alpha for 30 Indian and 15 Finnish company stocks. The Finnish companies had underperformed over the pre-crisis term, post crisis term and for the full tenure, while these unexpectedly worked quite well for the span of crisis. The Indian stocks had perfoemed worse for the span of crisis, opposite to their performnace for the span of pre crisis and over the post crisis term, which was quite well. The average of the Jenesen's alpha for the Indian stocks had a value of 0.00946483 over the full tenure, which means these stocks had performed 0.9% better than the expectations over full tenure while the average of Finnish stocks had been -0.020771296 for the full tenure, which means the stocks had underperformed by 2% than the expected rate.

Impact on the stock performance

For answering to this question, the descriptive statistical data for the four periods i.e. before crisis, for the span of crisis, post crisis and full- duration is compared by taking the returns and risks of different companies into consideration. As the market returns correspond to the firm's returns and the risks associated with the market and the companies keep on changing, the analysis thus made brings before us the fluctuating results for the three sub-periods of the time and the full-tenure taken into consideration. When the figures are compared, it shows drastic changes, which can be distinguished clearly due to the fall in the performance for the company during after crisis sub-period, the changes are considerable, hence, the results gives an insight of effect of financial crisis on the stock performance.

Effects on risk and return

The answers to this question can be most satisfactorily explained by validating the hypotheses made in terms of risk and return while beginning the research. This validation is made by taking into account the results for the descriptive, regression and graphical analysis done during research period:

Hypothesis 1 which states that the type of the risk involved with a stock of any company impacts its stock performance

This hypothesis holds an evidence for its acceptance as the variations in the risk variables including all types of risks such as the market specific risks which are tend to appear in a specific market and the firm risks, which are specific to a specific company for some internal factors, affect on the stock performance in the market. The variations in the performance of the companies can present an evidence for the dependency on the nature of risks for the stock performance. Thus, this hypothesis sets to be true for the research.

Hypothesis 2 which states that the systematic risk involved in a company affects its stock performance

The inferential statistics for the systematic risk with the stock returns shows a bit of support for the significant relation or dependency between these two values. A set of market risks always remain there within a specific market, which ultimately affects the performance of a company but this value does not impact significantly as the total risk involved is a combination of firm risk and market risk, and the market risk does not rely on affecting the different stocks according to different values but this value remains to be constant for every stock taken for a market and thus, systematic risk does not tend to interfere in the corresponding performance of the stocks, though there remains some quantity of market risk involved. Hence, the hypotheses does not give a justifiable significant approval though it evidents for the effect of systematic risk on the stock performance.

Hypothesis 3 which states that the unsystematic risk of a company affects its stock performance

The inferential statistical results for the relation between the unsystematic risk involved within a company and its stock shows a significant proof to support this assumption, similar to the case of systematic risk, but these variations are specific for a particular company and these does not apply on other companies. Thus, for a specific company, the firm risk(unsystematic risk) proves to be a major cause for the variations in their performance. Hence, this supposition is accepted.

Hypothesis 4 which suggests that the total risk of a company affects its stock performance

As the total risk is formulated to be the sum for the various risks associated with the company and more specifically, the market risk and firm risk formulating the total risk, which affects its stock performance. Very similar to the case of unsystematic risk and their relation with the company's performance, the inferential analysis confirms the existence of the relation between the total risk and the performance of a company. Hence, this hypothesis tends to be true and is relevant for the study.

Hypothesis 5 which states that the value of return on the company's stock affects its performance

The stock returns of a company definitely affected its performance. This can be finely seen through the graphical representation and through the descriptive statistics analysis, the increased stock returns led to the positive values of the Jensen's Alpha and thus, it shows the higher performance and for the decreased stock returns, the negative values of Jensen's Alpha proves the underperformance. Hence, the stock return strongly affects the performance of the company.

The answers to the objectives of the research are evident from the following interpretations:

The set of 45 stocks gives the result for the effect of the financial crisis on the performance of Finnish and Indian stocks through the comparison of stock returns on these stocks during the research periods. Also, the Jensen Alpha gives the interpretation of the underperformance or the superperformance of the stocks relative to the sub-periods of time.

The corresponding values of Risk and Returns for a set of 45 stocks confirms a generously considerable relation of risk involved and returns within a company. Also, the descriptive statistics analysis, regression and the graphical analysis gives a generous evidence of the existence of this relationship between different forms of risks and returns of a company. The stock performance of the set of 45 stocks can evidently give a truthfulness for the existence of relationship between the risk and returns.

6.2 Practical implementation

Since the commencement crisis, the global economy has been suffering from its devastating effects (Scott 2014). The research on this topic has been a significant work for many researchers. Understanding the impacts of various related entities of corporate sector companies on its performance has always been on the minds of many researchers due to its strong connectivity with the economy, financial status of business, performance of the companies and stock market (Dewaelheyns & Van , 2008). In this research, the focus was on studying the impact of crisis on the Finnish and Indian stock performance. A mixed set of results can be seen in the form of evidences that confirm the dependence of risk and returns on each other as well as on the stock performance. The stock exchange websites for the Bombay stock exchange bseindia.com and the nasdaqomxnordic.com for the Nasdaq OMX Nordic stock exchange, serves as a rich knowledgeable content and practical implications that set a reliable and authentic medium for studying further about this topic in future. As the results are focused on the corporate capital structure of Finland and India, the business researchers might get interested in the study as the research has provided with most of the significant aspects related to the capital structure of a company.

As the results incurred during this research are for the companies of these countries, other companies might get benefit from studying the market trends of these corporations, thereby providing them with the trends being followed by the companies for the span of crisis, before and post crisis tenure. As the research is focused on finding the relationship of the stock performance with the risks and returns of a company, this can be helpful for many other companies to get the knowledge about these aspects that can further impart them with the knowledge of how they can handle the situation of crisis and get prepared for any chance of financial instability in the future.

This study can also be beneficial for the investors and the financial analysts as with this study the investors can get the idea of the market trends being followed by a company, that can turn the situation into the investor's favour by aiding them with the figures that will help them in taking decision regarding their future investments with these companies (Dewaelheyns & Van, 2008). The financial analysts will also get benefitted from this study as after seeing the market trends of the companies, they can formulate the best solutions for any unexpected situation from taking the market trends of their own or rival's company into consideration. Thus, this study can help the owners and investors of a company to predict the market trends before making any investment.

6.3 Limitations and recommendations

As the research is applied on a sample of 30 Indian and 15 Finnish companies, this research has got restricted to data for only small set of companies. The results concluded during this study cannot be applied to other companies of same nature or others, so the whole market is not covered and the work lacks here due to a small sample of company set. Also, the research is conducted for the Finnish and Indian Companies, so the work has also got limited to these two countries only, the market trends being followed by the companies of these countries might not be effective enough for the other companies situated in different parts of the world. It requires an extensive study so as to precisely conclude the stock performance for the companies. This has not been possible at the time of research so the results are restricted to these companies only, cannot define the status globally as these results cannot be applied for other countries or companies except the ones in consideration but this research can certainly be applied to the other companies of same nature around located and working around these countries.

The CAPM undertakes the scope of market portfolio by considering not only the common stocks but also other variety of assets that must have been considered such as bonds, real estate and other forms of capital including the human capital too. These considerations could not be possible in the current search, which tend to become a drawback or limitation in the way of validating the research for its relaibilty.

As the study focuses on a specific set of risks, a few other types of risks which are possible to occur within a company, are ignored such as the variables taken for the examination might suffer from the problem of reversed association, which means while considering the dependency of variables on other variables, if one variable is dependent on the second variable, and simultaneously, the second variable gets dependent on the value for the first variable, the problem arises as such a situation would hinder the occurrence of results and thus, the validity for the variables can be obstructed to a great extent, hence, putting the reliability of the outcomes at a risk.

Future

The limitations occurring in the research can set as the scope for the future. As the research is totally focused on finding the stock performance by considering the risk and returns of the stock, this examination can also be made by using the other variables for the calculation for researching the work more deeply. A large amount of research has already been done on the topic and several other control variables have also been studied and applied related to the capital structure. A future research for these different variables can be done.

As the sample set taken is limited, this also serves as the future scope for the research. The sample size can be extended for the future research as well as the research can be performed for the different countries by taking more companies into consideration such as to get more reliable results that can be precisely applied to the other set of companies and for other countries too.

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Appendix

Appendix 1. Information of Indian Companies

Sr. Number	Security Code	Security Id	Security Name	ISIN No	Industry
1	500002	ABB	ABB India Limited	INE117A01022	Heavy Electrical Equipment
2	500122	AMBUJACEMR	AMBUJA CEMENT RAJASTHAN LTD.	INE125A01017	
3	500477	ASHOKLEY	ASHOK LEYLAND LTD.	INE208A01029	Commercial Vehicles
4	500031	BAJAJELEC	BAJAJ ELECTRICALS LTD.-$	INE193E01025	Household Appliances
5	532978	BAJAJFINSV	BAJAJ FINSERV LTD.	INE918I01018	Holding Companies
6	500042	BASF	BASF INDIA LTD.	INE373A01013	Specialty Chemicals
7	500043	BATAINDIA	BATA INDIA LTD.	INE176A01028	Footwear
8	500067	BLUESTARCO	BLUE STAR LTD.	INE472A01039	Consumer Electronics
9	500096	DABUR	DABUR INDIA LTD.	INE016A01026	Personal Products
10	500104	HINDPETRO	HINDUSTAN PETROLEUM CORPORATION LTD.	INE094A01015	Refineries/ Petro-Products
11	500111	RELCAPITAL	RELIANCE CAPITAL LTD.	INE013A01015	Finance (including NBFCs)
12	500112	SBIN	STATE BANK OF INDIA	INE062A01020	Banks

13	500113	SAIL	STEEL AUTHORITY OF INDIA LTD.	INE114A01011	Iron & Steel/Interm.Products
14	500114	TITAN	Titan Company Limited	INE280A01028	Other Apparels & Accessories
15	500144	FINCABLES	FINOLEX CABLES LTD.	INE235A01022	Other Elect.Equip./ Prod.
16	500165	KANSAINER	KANSAI NEROLAC PAINTS LTD.	INE531A01024	Furniture-Furnishing-Paints
17	500182	HEROMOTOCO	HERO MOTOCORP LTD.	INE158A01026	2/3 Wheelers
18	500233	KAJARIACER	KAJARIA CERAMICS LTD.	INE217B01036	Furniture-Furnishing-Paints
19	500285	SPICEJET	SPICEJET LTD.	INE285B01017	Airlines
20	500290	MRF	MRF LTD.	INE883A01011	Auto Tyres & Rubber Products
21	500330	RAYMOND	RAYMOND LTD.	INE301A01014	Textiles
22	500335	BIRLACORPN	BIRLA CORPORATION LTD.	INE340A01012	Cement & Cement Products
23	500575	VOLTAS	VOLTAS LTD.	INE226A01021	Consumer Electronics
24	500820	ASIANPAINT	ASIAN PAINTS LTD.	INE021A01026	Furniture-Furnishing-Paints
25	523367	DCMSHRIRAM *	DCM Shriram Limited	INE499A01024	Diversified
26	530965	IOC	INDIAN OIL CORPORATION LTD.	INE242A01010	Oil Marketing & Distribution

27	532461	PNB	PUNJAB NATIONAL BANK	INE160A01022	Banks
28	532617	JETAIRWAYS	JET AIRWAYS (INDIA) LTD.	INE802G01018	Airlines
29	532712	RCOM	RELIANCE COMMUNICATIONS LTD.	INE330H01018	Telecom Services
30	532454	BHARTIARTL	BHARTI AIRTEL LTD.	INE397D01024	Telecom Services

Appendix 2. Information of Finnish Companies

Sr. number	Name	Symbol	Currency	ISIN	Sector	ICB Code
1	ABB Ltd	ABB	SEK	CH0012221716	Industrials	
2	Alfa Laval	ALFA	SEK	SE0000695876	Industrials	2700
3	Autoliv SDB	ALIV SDB	SEK	SE0000382335	Consumer Goods	3300
4	Alm. Brand	ALMB	DKK	DK0015250344	Financials	8500
5	Amer Sports Oyj	AMEAS	EUR	FI0009000285	Consumer Goods	3700
6	Betsson B	BETS B	SEK	SE0011089259	Consumer Services	5700
7	BillerudKorsnäs	BILL	SEK	SE0000862997	Basic Materials	1700
8	CityconOyj	CTY1S	EUR	FI0009002471	Financials	8600
9	Danske Bank	DANSKE	DKK	DK0010274414	Financials	
10	Elisa Oyj	ELISA	EUR	FI0009007884	Telecommunications	6500
11	Finnair Oyj	FIA1S	EUR	FI0009003230	Consumer Services	5700
12	Fortum Oyj	FORTUM	EUR	FI0009007132	Utilities	7500
13	Jyske Bank	JYSK	DKK	DK0010307958	Financials	8300
14	KeskoOyj B	KESKOB	EUR	FI0009000202	Consumer Services	5300

15	Nokia Oyj	NOKIA	EUR	FI0009000681	Technology	9500