Market Efficiency in Weak Form: Empirical Evidence from Bangladesh Stock Market

BRAC University

Thesis Report

On

Market Efficiency in Weak Form: Empirical Evidence from Bangladesh Stock Market

Supervised By

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Submitted by

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Letter of Transmittal

4th of December, 2018

Dr. Salehuddin Ahmed

Professor

BRAC Business School

BRAC University

Subject: An application for the submission of Thesis report.

Dear Sir,

With due respect I would like to submit you the dissertation report entitled **"Market Efficiency in Weak Form: Empirical Evidence from Bangladesh Stock Market"**. I have got opportunity to prepare this project report, which is a vital part of academic program and it is a great achievement to work under your supervision and guidance. I have tried my best level to express all the things accurately.

Finally, I would like to thank you for your valuable guidance care in preparing the report. I will gratefully response to any clarification when required. I will be highly obliged if you are kind enough to give approval to this report.

Sincerely Yours,

……

Md.Delowar Hossain

ID: 16164040

Master of Business Administration (MBA)

BRAC University

Declaration

I am Md. Delowar Hossain, hereby declare that the presented dissertation report entitled **"Market Efficiency in Weak Form: Empirical Evidence from Bangladesh Stock Market"** is uniquely prepared by me. I confirm that the report is only prepared for my academic requirement not for other purpose. It might be with the interest of opposite party of the corporation. I also assure that this report is not submitted anywhere of Bangladesh before me.

Sincerely Yours,

……

Md.Delowar Hossain

ID: 16164040

Master of Business Administration (MBA)

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Acknowledgement

At first I want to express my gratitude to Almighty Allah for giving me the strength and ability to finish the task within the schedule time. The successful accomplishment of this report task is the outcome of the contribution of number of people. Especially, those who have given the time and effort to share their thoughts and suggestions to improve the report.

I would like to express my deep sense of gratitude and sincere appreciation and profound respect to my supervisor Dr. Salehuddin Ahmed, Professor, BRAC Business School, BRAC University, for his continuous support & guidance, valuable suggestion and inspiration that help me to complete this report.

Abstract

The report focus on the stock valuation which ultimate objective is to evaluate the stock to find out the undervalued or overvalued are traded in the Dhaka stock Exchange. Here, the return of daily trading price is used from 2013 to 2017 conducting 89 companies which are considered to know the intrinsic price in the market. Most common techniques to evaluate the stock is CAPM model. It is used to find out intrinsic value to compare with current market price which is executed to justify the CAPM model is valid or not. In the following study we use the historical date to find out intrinsic value after that we compare the intrinsic value with current market price. The study reflects that not a single company are traded in fare price that means each company are traded either undervalued or overvalued. I can say the companies which are traded in Dhaka stock exchange are inefficiency. Therefore, it can be concluded that the market are inefficient which are predictable. The arbitrage profit is possible.

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Chapter- One

- Introduction
- Brief Description about Dhaka stock exchange
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- Literature Review

1.0 Introduction

Living in 21st century our economy development mostly controlled and depends on the capital market which is a major vehicle of economic growth. Capital market helps to allocate the economics resources into the productive activities to the economy and to ensure the pricing of securities treaded in the market. A strong and functioning of stock markets have considerable effect on growth of an economy in developing countries like Bangladesh.

Answering the following question we can get a better understanding about stock market efficiency. Are security prices predictable? Can there be securities with information that is not reflected in security prices? Does information flow in multiple markets simultaneously like all types of securities market? Is it possible for all the investors to have the similar capability to acquire, process and disseminate information? Here, the literature is clearly discussed on these questions to get the proper answer. Some of the analyst have the belief that the market is efficient. On the other hand, other analysts have the belief that the stock markets are inefficient. From the belief of stock market efficiency, there are three forms of efficient market hypothesis which is constructed by Fama (1991). A market is weak form efficient if the current stock prices or return series are not predictable from past prices or volume of information. The market is known as semi-strong form efficient if the current security prices are reflected by all publicly available information. Last, the market is known as strong form efficient if security prices are reflected by all private and public information. There are some important literatures on stock pricing as well as some important theories where investors behavior and stock price movement behavior are discussed in improvement of stock market. However, some of the strong research paper articulated the reasons in the behind of market behavior. Harding behavior is incanted one of the common reason to be inefficient market. Most of the research is based on developed country like USA, UK, or other developed country. There are some papers based on Indian market. However, here I consider the Dhaka Stock Exchange of Bangladesh, better known as DSE, which is one of the iconic emerging market during in term of its rapid growth of high trade volume, more market capitalization, and more number of enlisted companies in both securities market. The inefficient research over Bangladesh Stock Market the structure, functioning, efficiency and determinants of share returns which are more questionable to address our market in the acceptance of world wide. Since Bangladesh Stock Market has stated after the 1980s, it is not a long period to determine its

structure. However, its current scenario indicates that it needs to develop. Again, in the format of industrialization in Bangladesh has been suffering from the beginning because of some factors like agricultural based country, not encouraging entrepreneurs, and few productivity in real sectors and undeveloped financial sector. However, with a great spread of privatization and high GDP growth of the South Asian Newly Industrialized Countries (NIC), Bangladesh represents an optimistic platform in term of developing and utilizing the securities market for industrialization development. For the development the securities market in Bangladesh, different experts form many foreign and national, especially China, have some important studies (for example, Robbins 1980, Tandon 1990 and Seok and Park 1992). Here, all the studies mainly give the importance on the supply side problems of the securities market and suggest some challenges how to improve of the market.

It is observable that the Dhaka stock market has been experiencing volatility from its beginning. Two time market crashed was identifiable in Bangladesh, one is in November 1996 where the stock index had gone in highest point in history, another was in 2009 eventually the index point had gone in apex. Investors lost their capital and some of the cases investors died after losing everything. After that government reformed regulators body who had the responsibility to introduce the automation in 1998 and some experts came in market to study the marked on informational efficiency, particularly to investigate the efficiency automated trading system in the market and its impact on the capital market. However, there is no initiative put in right place before this study to undertake proper research on the market efficiency issues afterwards.

From the theory of Efficient Market Hypothesis (EMH), there are a number of studies which are conducted by different researchers around the world since last few decades. However, the studies provide different result based on the context. Now there are different theories that have been articulated to justify the behavior of capital market. This paper contributes to the existing empirical literature on the weak-form efficiency of emerging Dhaka Stock Exchange. My thesis paper tries to find the evidence on Efficient Market Hypothesis (EMH) using various parametric and non-parametric tests using the experiences from past and recent studies what is the studies on the Dhaka Stock Market.

1.1 Brief Description about Dhaka stock exchange

On April 28, 1954 the DSE was first incorporated as the East Pakistan Stock Exchange Association Limited. However, formal trading began in 1956 with 196 securities listed on the DSE with a total paid up capital of about Taka 4 billion (Chowdhury, 1994). On June 23, 1962 it was renamed as Dhaka Stock Exchange (DSE) Limited. After 1971, the trading activities of the Stock Exchange remained suppressed until 1976 due to the liberation war and the economic policy pursued by the then government. The trading activities resumed in 1976 with only 9 companies listed having a paid up capital of Taka 137.52 million on the stock exchange (Chowdhury, 1994). As of 30th June, 1999 there were 230 Securities listed on the DSE with a market capitalization of Taka 50,748 million. In the FY 1998-99, the total issued capital and debentures of all listed companies with the Dhaka Stock Exchange was Taka 28,684 million compared to Taka 30,211 million in the FY 1997-98. With the time forward the listing companies are increasing in 2018 there are about 318 different forms of financial instruments of different companies traded. Recently China inked with Bangladesh Government to invest in Bangladesh stock market. The Dhaka Stock Exchange (DSE) is registered as a Public Limited Company and its activities are regulated by its Articles of Association and its own rules, regulations, and by-laws along with the Securities and Exchange Ordinance, 1969 the Companies Act, 1994 and the Securities and Exchange Commission Act, 1993 (DSE, 1999). As per the DSE Article 105B, its management is separated from the Council. The executive power of the DSE is vested with the Chief Executive Officer (CEO). The CEO is appointed by the Board with the approval of the SEC. At present, the DSE has a staff consisting of 115 people. The Dhaka Stock Exchange is a self-regulated non-profit organization. It has provisions for 500 members though at present the number of members is 195. Membership is open to the foreigners as well. The Exchange has a 24 member Council, of which 12 are elected from the members and the other 12 are nominated as non-member from different apex bodies. Trading is done through automated on-line system every day except Friday and Saturday, and other government holidays. There are four markets in the system: Public Market: Only trading of market lot share is done here through automatic matching. Spot Market: Spot transactions are done here through automatic matching which must be settled within 24 hours. Block Market: A place where bulk quantities of shares are traded through pick and fill basis. Odd Lot Market: Odd lot scripts are traded here based on pick and fill basis. All transactions in public market of a day, after netting,

are settled and cleared through the DSE Clearing House due on 3rd and 5th working day respectively, calculated from date of trading. Members shall be allowed to carry out transaction of foreign buyers and/or seller involving a custodian bank to be settled directly between the member through the custodian bank within the fifth day subsequent to the trading day, T + 5 in respect of the transactions carried out on each trading day with intimation to the clearing house. Currently there are 230 issues listed securities in the DSE, which is 2.68% higher than that of the previous year. However, the growth of mutual funds and debentures is constant. No new issues of mutual funds or debentures were issued. The performance of DSE in the total number of tradable securities increased by 1.97 % but the issued capital of all listed securities declined by 5% during this period. However, both total turnover of securities and total traded amount of securities has increased enormously compared to that of the previous year. The total Market Capitalization of all listed Securities in the DSE amounted to US$ 1046.36 million in 2017 compared to US$ 1283.79 million in 2016 representing a decline in market capitalization by 22%. The Market Capitalization declined during the period of 2016-17 due to the following reasons listing of lesser number of new issues, absence of rights and bonus issues, and impact of decrease in all share price index (2009). The all share price index of the DSE declined from 676.47 to 546.79 during this period. It is to be noted here that special incentives are provided to encourage non-resident Bangladeshis to invest in the capital market. The non-resident Bangladeshis were to enjoy facilities similar to those of the foreign investors. Moreover, they can buy newly issued shares/debentures of Bangladeshi companies and can maintain foreign currency deposits in special accounts for up to five years. A quota of 10% reserved for non-resident Bangladeshis in primary shares (IPO) has also been initiated.

1.2 Objectives of the Report:

The initial objective of this report is to evaluate the stock market in term of weak of efficiency in Dhaka Stock market perspective. However, the objectives is not limited with in above behind this study is something broader. Objectives of the study are summarized in the following manner:

Board Objective

The board objective of this study is to find out intrinsic value to compare with current market price which is executed to justify the CAPM model is valid or invalid.

Specific Objective

Find out the intrinsic value of stock which helps to short out which one is either overvalued or undervalued which will help me to buy the stock from bearish market or sell in bullish market.

Scope of the Study

After accessing the information from Dhaka stock exchange, I will analysis all the collecting information each individual companies. I will collect the date from Dhaka stock exchange library. From my analyze part different sort of graphs, charts, table will be used for decision making.

Limitation of the study

The collecting and analyzing date is not easy. What drawbacks make me difficult to articulate my thesis as followings?

- Inputting all the data is time consumed because current listed companies is about 89
- Short out the companies which one should be given preference
- Find out the software which will be used for my quantitative research

1.3 Literature Review

The market is referred as the efficient when all the available information reflects in the market in accurately. As the price is reflected with the information, the market will continue according to its own path, the theory, Efficiency market Hypothesis (EMH), asserts the market efficiency with reflecting information. On the other hand, the market is would be inefficiency relating the investor's behaviour on the market. EMH sets the efficiency theory with some assumptions. The market would be traded fairly. No one pass the information. Quickly reflects on the market. Investors must be enough educated about investment issues. However, it is the hypothesis where investors can predicate the market about its movement. According to the movement of the market, investors can select the stock and invest on it to achieve abnormal profit.

There are a number of studies which buttressed weak form market efficiency (Sharma and Kennedy 1977), who evaluated the stock indices of Bombay, London and NYSE during the period 1963 to 1973 using run test and spectral analysis and both the tests confirmed the random movement of stock indices for all the three stock exchanges. Then, Barnes (1986) tested weak form market efficiency for Kaula Lumpur Stock Exchange (KLSE). Rahman et al. (2004) evaluated Dhaka Stock Exchange (DSE) for the existence of weak form for the period of January 31, 1990 to September 30, 2003 using monthly index time series. For such evaluation, unit root tests (ADF and PP) were used and the results supported the hypothesis that DSE index time series contains unit root which implies the existence of weak form market efficiency in DSE. Akinkugbe (2005) explored Botswana stock exchange (BSE) for weak form of efficient market hypotheses using 738 weekly observations for the period of June 1989 to December 2003. Reyashid and Hossain (2018) studied the market efficiency on fifteen selected Asian countries by considering daily stock's index to justify the market efficiency. They do not find a single country which trades in efficiency market.

Autocorrelation was used to test the weak form efficiency in BSE. The autocorrelation test does not evidenced serial correlation and the result of both unit root tests indicated a stationary process for stock returns. Therefore, it implied that stock markets in Botswana were efficient in weak form.

Omran (2006) investigated the validity of the random walk market efficiency hypothesis and tested for calendar effects in five major Middle Eastern emerging markets by applying the run test, autocorrelation function, box-pierce test and unit root test for testing the random walk as well as kruskal-wallis is applied to test the calendar effect which is known as a range of statistical and econometrics techniques. It comes up a result that Israel's TA- 100 stock market is a greater support for the random walk hypotheses (RWH) compared with the other markets in the sample. There were anomalies found which is related to day of the week effects and it does not appear to be related to the pattern of trading days over the week, and which might be accounted for by other institutional factors specific to the countries in the sample. Asiri (2008) used cross sectional time series data for forty listed companies in Bahrain Stock Exchange (BSE) over the period from June 1, 1990 to December 31, 2000 to study the behaviour of stock prices in BSE.

Chapter – Two

- **Methodology**
- **Data and observation**
- **CAPM Formulation**
- **Intrinsic Value**

2.0 Methodology

2.1 Data and observation

Secondary Information Source

The historical information from 2013 to 2017 is considered. We analysis 218 leading companies from Dhaka stock exchange. I collected all the data from Dhaka Stock Exchange Library. Here, I select 218 companies out of 350 listed companies because of shortage of information. I analysis five years data. However the newly listed company's information cannot be aligned with my study as there are less than five years information.

The market return is calculated as following.

$$Return = ln\frac{pt}{pt-1}$$

pt is the market price of "t" time
$pt-1$is market price of "t-1" time

2.2 CAPM Formulation

The most important part of my research is the model that we use to find out the fair value of stock. Different Analysts introduced the CAPM in different times indecently like Jack Treynor (1961, 1962), William F. Sharpe (1964), John Lintier (1965) and Jan Massin (1966).

The formula to find out the required rate of return of stock by using

$$E(Ri) = Rf + (Rm - RF)\ \beta$$

The way to find out the market return

Rm = (Ending of Month Stock Price/ Being of Month Stock Price) - 1

The way to find out the Beta

β = Calculating by using slope equation in excel.

Here, the risk free rate is taken the rate of T-bill that is risk free interest rate. The T-bill (offered by Government) maturity period is one year that is 4.5%.

The T-bill rate is collected from Bangladesh Bank website which is for one year.

2.3 Intrinsic Value

$$P = \frac{D}{E(Ri)}$$

D = Current Price X Market Return

E (Ri) = Required rate of return of i company

The intrinsic value is the fair market price. Here the main find out is the intrinsic price because it helps to the market efficiency. I know in efficiency market the intrinsic value and current trading price would be equal.

2.4 Paired Sample T-Test

Paired Samples Statistics

The mean of Current Market Price and intrinsic value will be presented to show the difference between them through statistics. Standard deviation and standard error mean also be presented.

Paired Samples Correlations

Only the correlation between current market price and intrinsic value will be presented.

Paired Samples Test

In the paired sample test will be used to check the mean and standard deviation as well as the standard error mean. The significance error will identify the significance level. If significance level is less or equal 5%, this study is statistically significance.

Chapter- Three

Analysis and Findings

- **Paired Sample T-Test**
- **Return on all Companies**
- **Stock Valuation (Undervalued or Overvalued)**

3.0 Analysis and Findings

After analysis I understand which companies are undervalued and which companies are overvalued. Then we take the decision to include the companies in my portfolio. If we look the following graph we can easily understand the position of the companies. Here there are two curves. The blue curve indicates the intrinsic value and the Orange curve indicates the market value. We see here sometimes the intrinsic value curve cross the market value at this point the company is undervalued. And at the time when the market value cross the intrinsic value at this time the company is overvalued. If we have any shares in my hand we should sell these in the market because the price may fall at any time. Since we want to make portfolio here, we need to buy shares. So we prefer the shares which are undervalued.

3.1 Paired Sample T-Test

Paired Samples Statistics

Table-1

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	CMP	137.8745	89	345.14209	23.93130
	Intrinsic Value	138.1373	89	345.78773	23.97607

In the table-1, the mean of Current Market Price and intrinsic value is 137.8745 and 138.1373 which difference is less than 1. The number of observation is 208.

Paired Samples Correlations

Table-2

		N	Correlation	Sig.
Pair 1	CMP & Intrinsic Value	89	1.000	.000

Paired Samples Test

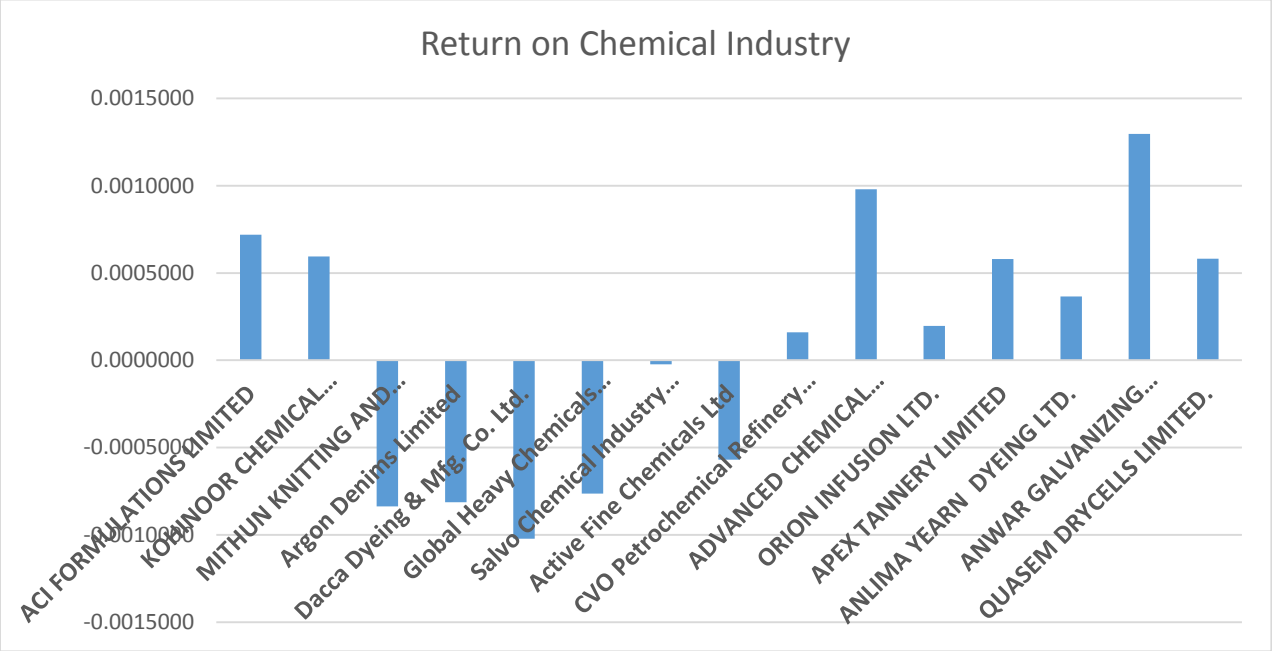
Table-3

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Upper	Lower			
Pair-1 CMP – Intrinsic Value	-.26281	.64670	.04484	-.35121	-.17441	-5.861	89	.000

In the paired sample test the mean is -.26281 and standard deviation is .64670 the standard error mean is .04484. The significance error is .000 which is less than 5%. This study the confidence level is 95%. Therefor this study is statisticaly significance.

3.2 Return on all Companies

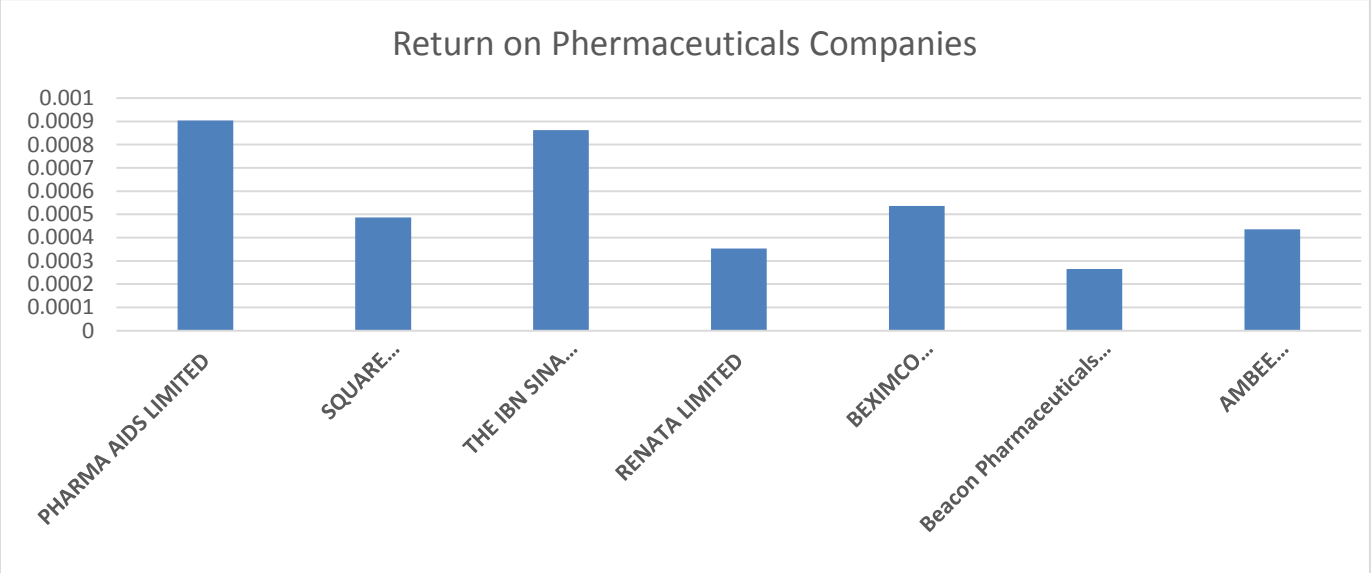
Graph-1
Return on Chemical Industry



In Chemical Industry we see the flow of retrun is mixed. Mithun CHemencal, Argon Denimes, Dacca Dyeing, Global Heavy, Active fine offers the negative return, Among them Global Heavy vhimical offers the highest negative return. On the other hand, Anawer galvanizing offers the highest return which is about .00010.

Graph-2

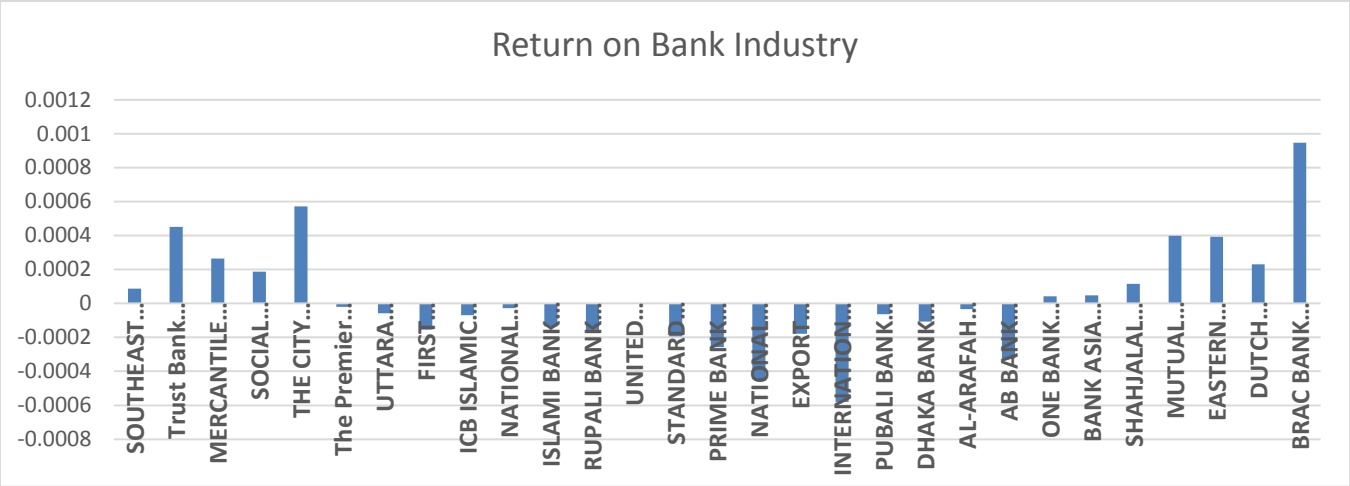
Return on Phermaceuticals Companies



In the Phermaceuticals industry all company return is positive. Among all companies Pharma Aids lid. And The Ibn Sina Phermaceuticals is the highist return which is almost .0009. Therefor I can say that this indudtry is doing well in our country.

Graph-3

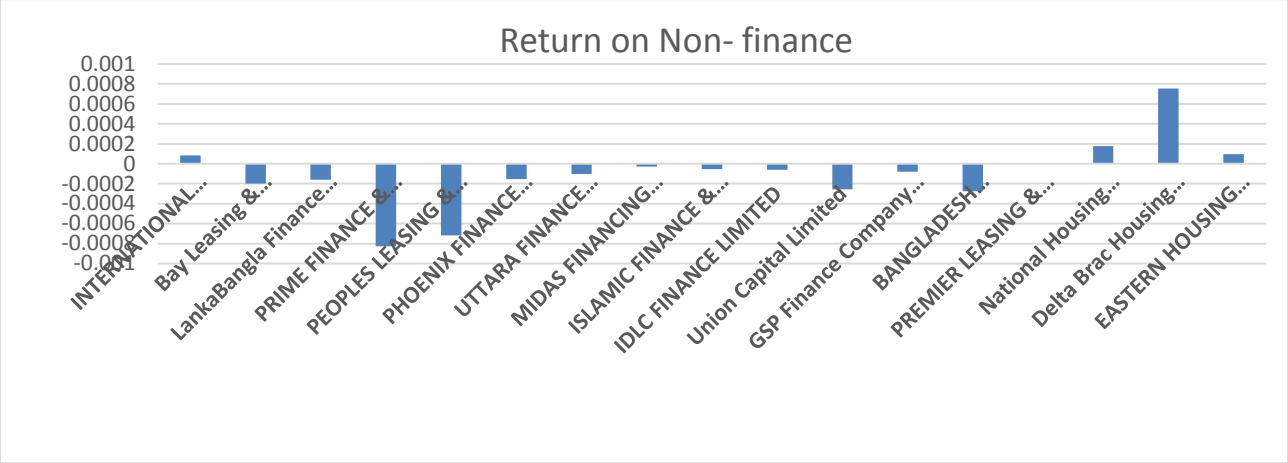
Return on Bank Industry



The return on the bank industry is mixed. We can see in the graph the maximum return is negative and some bank have a positive return. The Trust Bank, The City Bank, and Brac Bank ltd. is the positive highest return which is .001. The highest negative return is Pubali Bank ltd. which is .006.

Graph-4

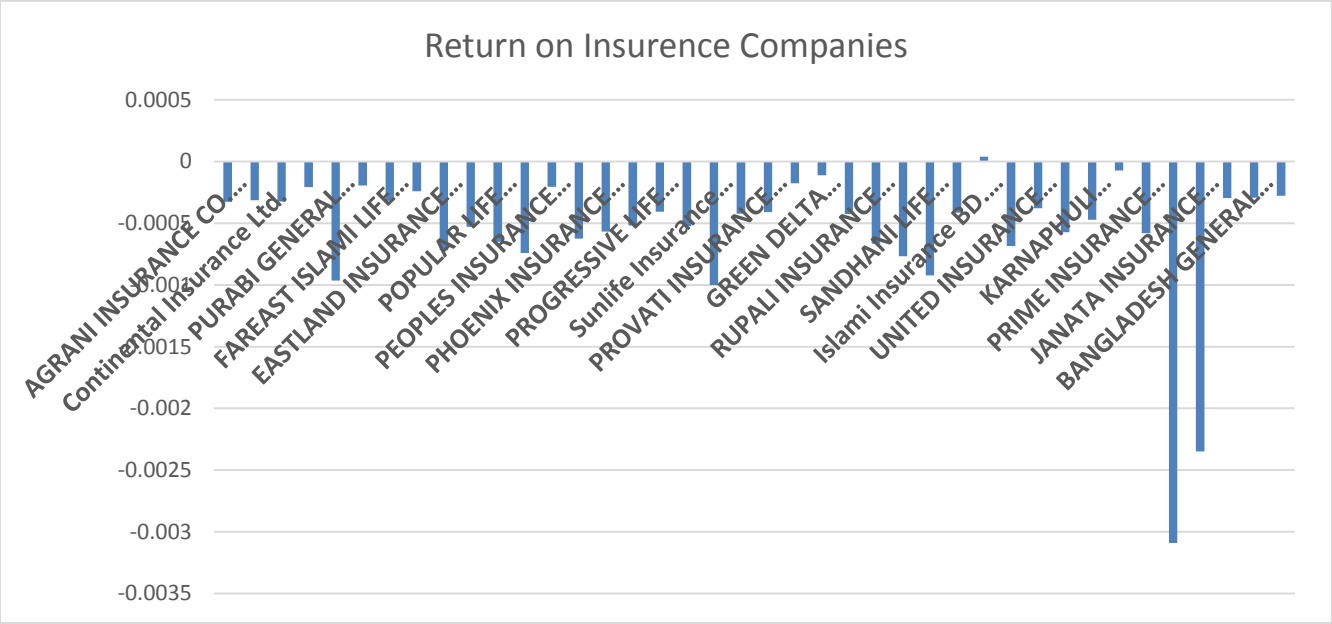
Return on Non- finance



Return on Non- Finance is not good in our country because we can see in the gragh the most company return is negative and some company return is positive. Delta Brac Housing Finance is the highiest positive return which is almost .008. Prime Finance and Investment is the highest negative return which is above .008.

Graph-5

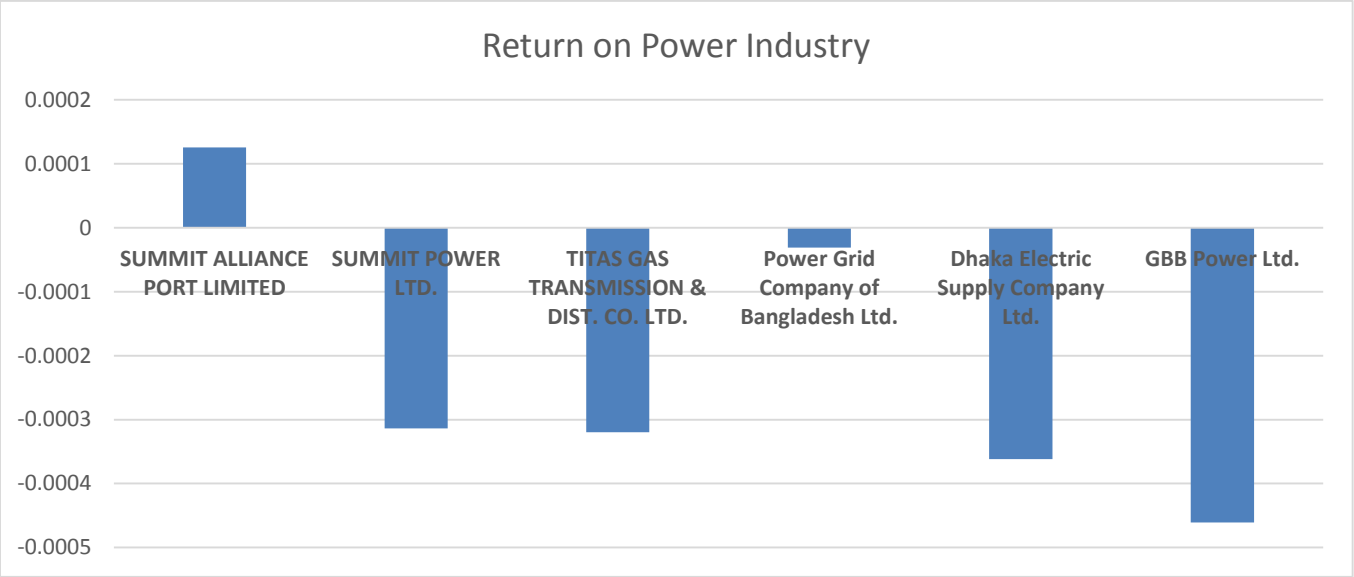
Return on Insurence Companies



In the Insurance Industry all Companies have a negative return. The Delta Life Insurance and Janata Insurance is the highest negative return which is the .003. So the situation of insurance companies in our country is not well. This return reflect all this things.

Graph-6

Return on Power Industry



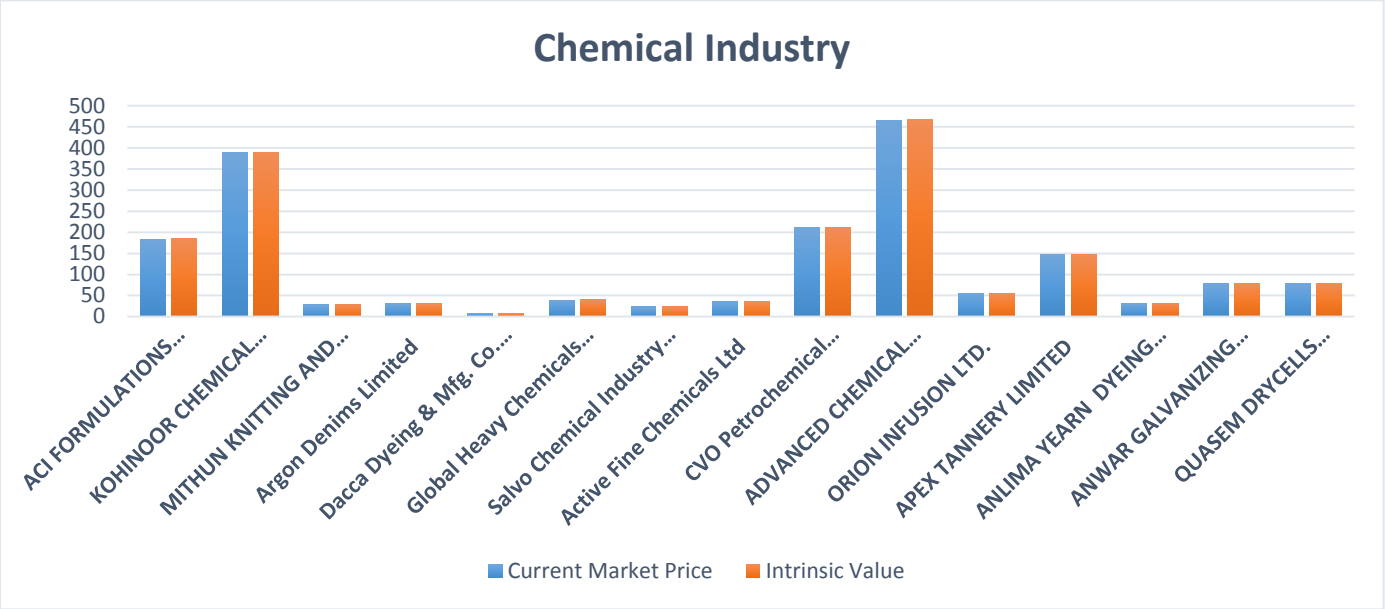
The Power Industry all companies have a negative return without the summit Alliance. The negative return is GBB Powet Ltd. which is above .0004. this is the highest negative retrun in power industry.

3.3 Stock Valuation (Undervalued or Overvalued)

After analysis we understand which companies are undervalued and which companies are overvalued. Then we take the decision to include the companies in my portfolio. If we look the following graph I can easily understand the position of the companies. Here there are two curves. The blue curve indicates the intrinsic value and the red curve indicates the market value. We see here sometimes the intrinsic value curve cross the market value at this point the company is undervalued. And at the time when the market value cross the intrinsic value at this time the company is overvalued. If we have any shares in my hand we should sell these in the market because the price may fall at any time. Since we want to make portfolio here, we need to buy shares. So we prefer the shares which are undervalued.

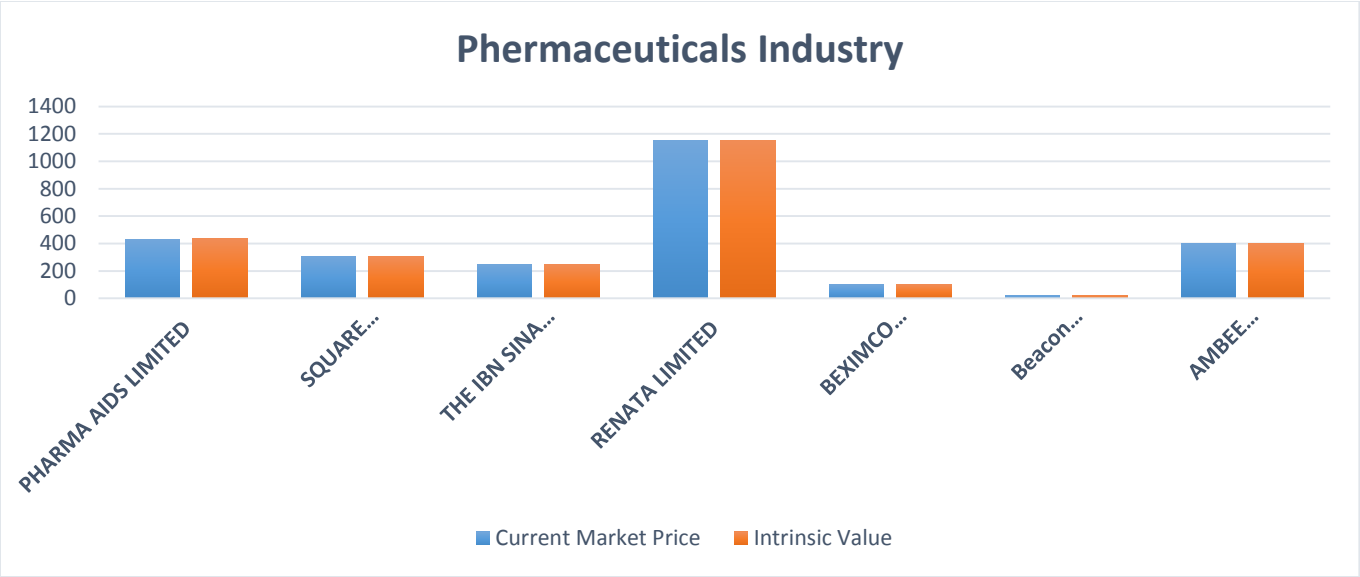
Here, the graph shows the industry based comparison. I maintain the sequence of each industry when I draw the graphs.

Graph-7



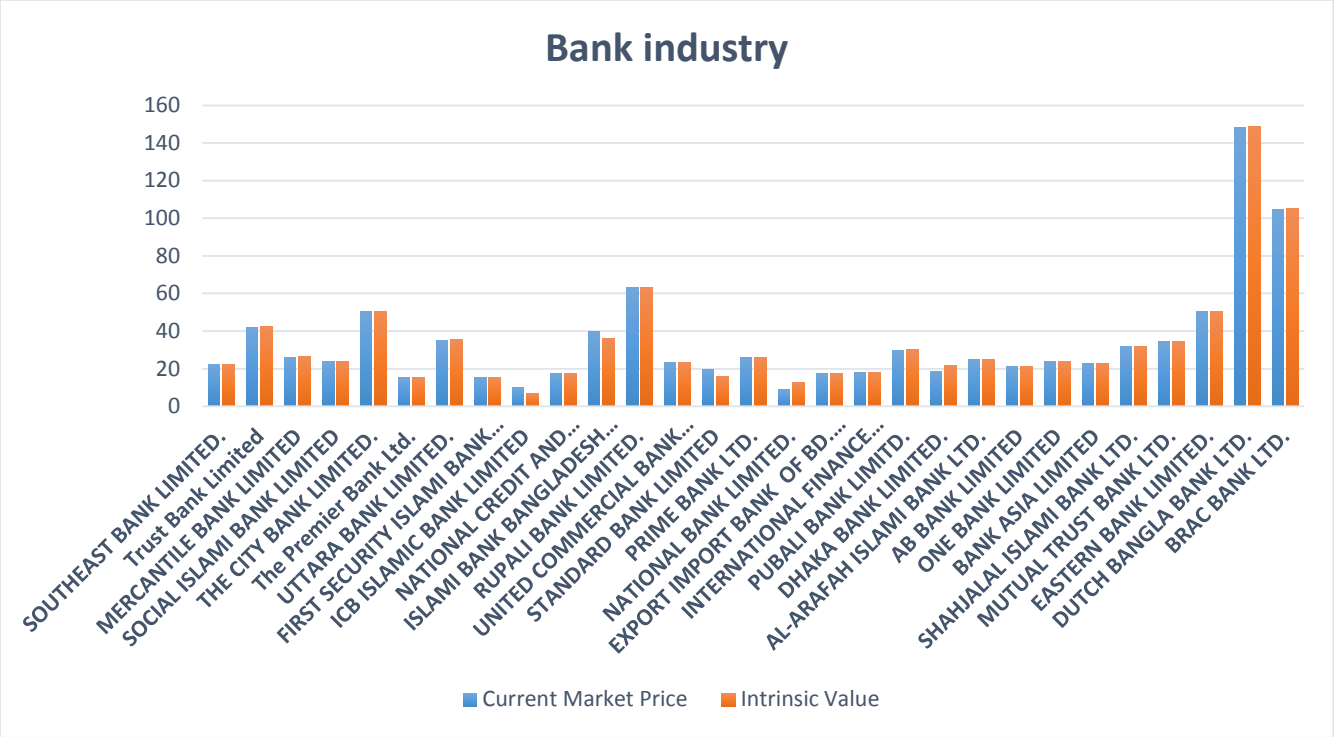
In the graph we can see two line, the blue line represent the Current Market Price and the Orenge line represent the Intrinsic Value. After findigs the intrinsic value compare with current market price I find out that some companies have overvalue and some companies have a undervalue. The value difference is not more. Many of companies value difference is fractional which is very small. It is not impact in the price.

Graph-8



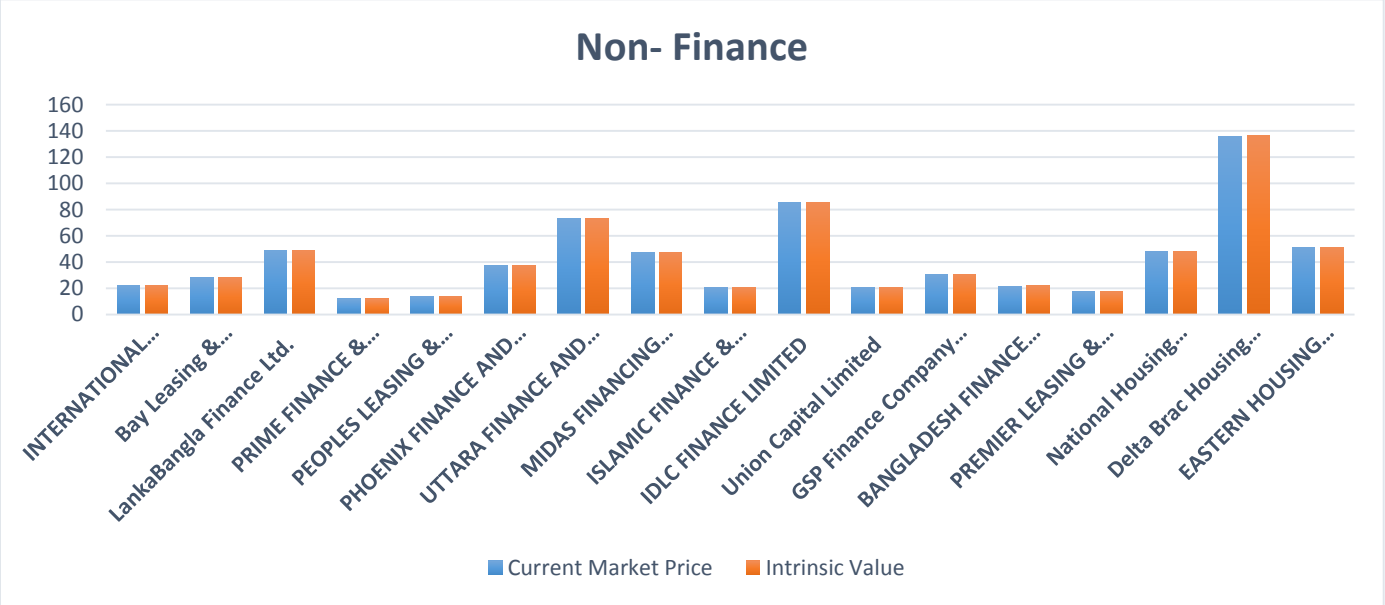
In this graph represents the Phermaceuticals Industry.In the graph we can see two line, the blue line represent the Current Market Price and the Orenge line represent the Intrinsic Value. After findigs the intrinsic value compare with current market price I find out that some companies have overvalue and some companies have a undervalue. The value difference is not more. Many of companies value difference is fractional which is very small. It is not impact in the price. The highest share price is Renata lid. Which almost 1200tk per share. The lowest share price is Becon phermaceuticals.

Graph-9



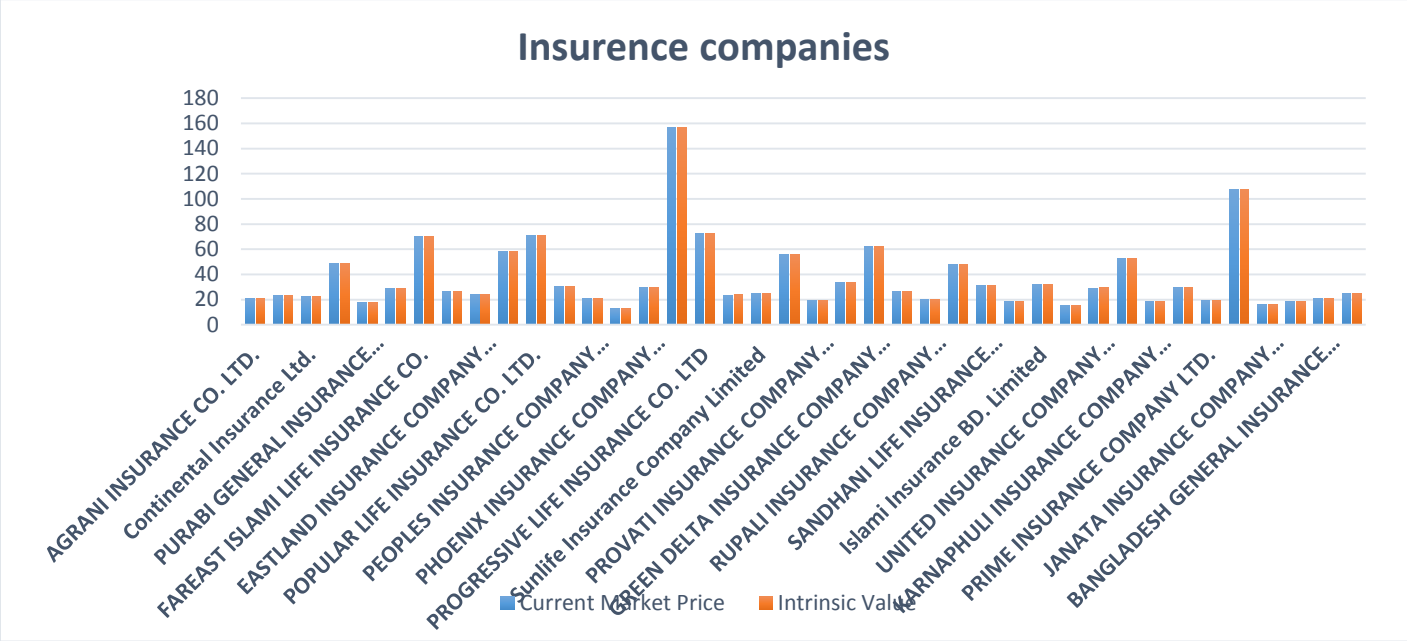
This graph is represents the Bank Industery. In the graph we can see two line, the blue line represent the Current Market Price and the Orenge line represent the Intrinsic Value. After findigs the intrinsic value compare with current market price I find out that some companies have overvalue and some companies have a undervalue. The value difference is not more. Many of companies value difference is fractional which is very small. It is not impact in the price. The highest share price is Dutch Bangla Bank ltd. which is above 140tk per share and the second highest is the Brac Bank ltd. which is above is 100tk per share. The lowest share price is ICB Islamic Bank ltd. which is less then 10tk per share.

Graph-10



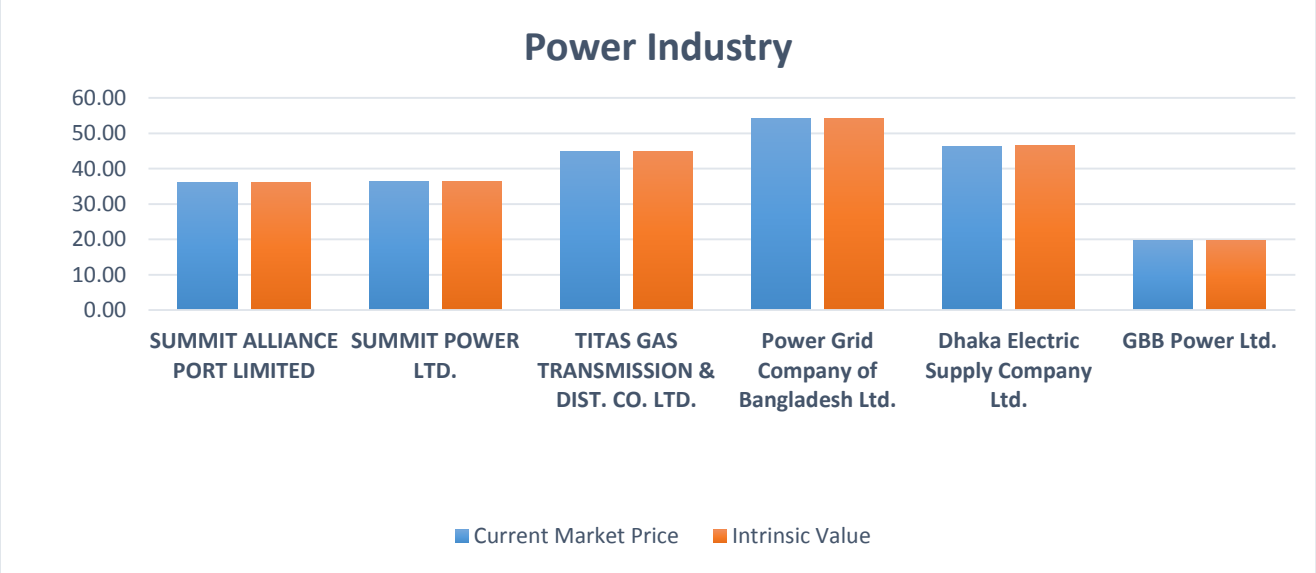
This graph is represents the Non- Finance. In the graph we can see two line, the blue line represent the Current Market Price and the Orenge line represent the Intrinsic Value. After findigs the intrinsic value compare with current market price I find out that some companies have overvalue and some companies have a undervalue. The value difference is not more. Many of companies value difference is fractional which is very small. It is not impact in the price. The Delta Brac Housing is the highest share price which is almost 140tk per share. The lowest share price is the Prime Finance and Investments which is less then 10tk per share.

Graph-11



This graph represents the Insurance Companies. In the graph we can see two line, the blue line represent the Current Market Price and the Orenge line represent the Intrinsic Value. After findigs the intrinsic value compare with current market price I find out that some companies have overvalue and some companies have a undervalue. The value difference is not more. Many of companies value difference is fractional which is very small. It is not impact in the price. The highest share price is Phoenix Insurance Company and second highest is Prime Insurance Company. The lowest share price Peoles Insurance Company which is 10tk per share.

Graph-12



In the graph we can see two line, the blue line represent the Current Market Price and the Orenge line represent the Intrinsic Value. After findigs the intrinsic value compare with current market price I find out that some companies have overvalue and some companies have a undervalue. The value difference is not more. Many of companies value difference is fractional which is very small. It is not impact in the price. In the power industry all companies share prise is almost similar among all the highest share price is power Grid Company of Bangladesh ltd. which is above 50tk per share.

Chapter – Four

- **Descripted Statistic Showing in Table**

4.0 Descripted Statistic

The calculated stock return was used in the following descriptive statistics: mean, median, standard deviation, variance, skewness, and range to observe our study.

In the Table-1 below, descriptive statistics of 89 companies with different industries are disclosed. The daily returns of Dhaka stock market are negatively skewed which indicates that, the empirical returns were more negative than positive in these markets. Average weekly return is highest in Pharmaceutical Industry (0.004) with a standard deviation of 3.1%, while Bank industry has the lowest weekly average returns. During the observed period, Chemical industry had a weekly return of 0.1% along with a standard deviation of 2.00%. The Jarque-Bera test rejects the normality on the sample set consisting of weekly returns from the market of the following all the industries. According to the findings, it can be observed that, the return series from Pharmaceutical and Cement Industry period from 2001 to 2017 accepts the null hypothesis of normal distribution. We can reject the null hypothesis at 5% significance level. **Showing in Appendix in Table 1 to 6.**

Chapter- Five

Correlation Showing in Table

5.0 Correlation

It can be observed from the table that, our sample data from all the considering markets provided a p value which is almost zero. Therefore, we can conclude that, our findings reject the null hypothesis of random walk. In order to understand the inter-correlation among all the markets, we studied the correlation matrix in Table- below where I analyzed the auto correlation. The pair wise correlation coefficient in different industries are either positively or negatively related. The positive correlation means the returns from both companies are in same direction and negatively related correlation coefficient reveals that the returns from both companies are inversely related. The observed correlation coefficient range was .71 to -.13 based on my result, returns from different industries which are highly positively related. Here I present the correlation between companies according to the following industries. **Showing in Appendix Table 1 to 4.**

Chapter- Six

- **Recommendation**
- **Conclusion**
- **Reference**
- **Appendix**

Recommendation

The purpose of this report has been to investigate empirically the return behavior of Dhaka Stock Exchange (DSE), the informational efficiency of the DSE where CAPM model is used. The Bangladesh capital market has gone fluctuation in the market price over the 2013-2017 period. During this time period, the stock market was opened to the foreign investment. The DSE returns show both negative return and positive return in 89 companies. The DSE volatility tends to change over time, and is serially correlated. In addition, the DSE returns display significant serial correlation, implying stock market inefficiency. The results also show a significant relationship between conditional volatility and the DSE stock returns, but the risk-return parameter is negative and statistically significant. The negative risk-return relationship in DSE may result from the tax treatment of interest income and dividend income, and weaker corporate profit performance. Moreover, the stock market has been generally bearish as most of the companies are traded in undervalued. However, the study also find out that some of the companies are traded overvalued. As the market is either undervalued or overvalued, the market can be considered as inefficient market.

Conclusion

The stock market is always an inefficiency market when it cannot be reflected by immediacy information over the price. As my study conclude that the Dhaka stock market is inefficiency with the statistical information, the study is valid. Ultimately the investors can earn abnormal profit through the analysis of historical information. The processing of new information in Bangladesh is rather weak, and may result from the persistent large number of non-actively traded shares, and the limited role of mutual funds and professionally managed investment and broker houses. As a policy to improve the capital market efficiency, the timely disclosure and dissemination of information to the shareholders and investors on the performance of listed companies should be emphasized.

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Appendix

Calculated Value

Company Name	Company Return	Market Return	Beta	Risk Free Rate	Risk Premium with Beta	Required Rate of Return	Current Market Price	C Market Price * Market Return	Intrinsic Value
ACI FORMULATIONS LIMITED	0.0007		0.0616		0.0000	0.0004	190.0	0.0551	148.90
KOHINOOR CHEMICAL COMPANY(BANGLADESH) LTD.	0.0006		-0.1038		0.0000	0.0004	389.2	0.1128	293.81
MITHUN KNITTING AND DYEING(CEPZ) LTD.	-0.0008		0.0401		0.0000	0.0004	28.0	0.0081	21.84
Argon Denims Limited	-0.0008		0.1059		0.0000	0.0004	31.5	0.0091	24.94
Dacca Dyeing & Mfg. Co. Ltd.	-0.0010		0.0794		0.0000	0.0004	8.9	0.0026	7.00
Global Heavy Chemicals Limited	-0.0008		-0.0302		0.0000	0.0004	39.3	0.0114	30.16
Salvo Chemical Industry Limited	0.0000		0.0778		0.0000	0.0004	23.2	0.0067	18.25
Active Fine Chemicals Ltd	-0.0006		0.0586		0.0000	0.0004	35.3	0.0102	27.65
CVO Petrochemical Refinery Limited	0.0002		-0.0079		0.0000	0.0004	210.2	0.0609	162.14
ADVANCED CHEMICAL INDUSTRIES LIMITED	0.0010		0.0905		0.0000	0.0004	466.3	0.1351	367.89
SQUARE PHARMACEUTICALS LIMITED	0.0005		0.0308		0.0000	0.0004	304.2	0.0881	236.72
THE IBN SINA PHARMACEUTICAL INDUSTRY LTD.	0.0009		0.0809		0.0000	0.0004	247.6	0.0717	194.91
RENATA LIMITED	0.0004		0.0841		0.0000	0.0004	1,152.7	0.3340	908.07
BEXIMCO PHARMACEUTICALS LIMITED	0.0005	0.0003	0.0073	0.0004	0.0000	0.0004	104.1	0.0302	80.57
Beacon Pharmaceuticals Limited	0.0003		-0.0153		0.0000	0.0004	21.3	0.0062	16.40
AMBEE PHARMACEUTICALS LIMITED	0.0004		0.1899		0.0000	0.0004	398.5	0.1155	321.82
SOUTHEAST BANK LIMITED.	0.0001		0.0204		0.0000	0.0004	22.3	0.0065	17.31
Trust Bank Limited	0.0005		-0.0462		0.0000	0.0004	42.1	0.0122	32.19
MERCANTILE BANK LIMITED	0.0003		0.0831		0.0000	0.0004	26.3	0.0076	20.71
SOCIAL ISLAMI BANK LIMITED	0.0002		0.0350		0.0000	0.0004	23.7	0.0069	18.46
THE CITY BANK LIMITED.	0.0006		0.1188		0.0000	0.0004	50.4	0.0146	40.03
The Premier Bank Ltd.	0.0000		0.0664		0.0000	0.0004	15.4	0.0045	12.08
UTTARA BANK LIMITED.	-0.0001		0.0126		0.0000	0.0004	35.3	0.0102	27.36
FIRST SECURITY ISLAMI BANK LIMITED	-0.0002		0.0078		0.0000	0.0004	15.4	0.0045	11.92
ICB ISLAMIC BANK LIMITED	-0.0001		-0.0665		0.0000	0.0004	6.9	0.0020	5.25
NATIONAL CREDIT AND COMMERCE BANK LIMITED	0.0000		0.0189		0.0000	0.0004	17.5	0.0051	13.58
ISLAMI BANK BANGLADESH LIMITED.	-0.0001		0.0105		0.0000	0.0004	35.9	0.0104	27.81
RUPALI BANK LIMITED.	-0.0002		0.0645		0.0000	0.0004	63.0	0.0183	49.41
UNITED COMMERCIAL BANK LIMITED.	0.0000		-0.0156		0.0000	0.0004	23.2	0.0067	17.86

STANDARD BANK LIMITED	-0.0002	-0.0160	0.0000	0.0004	15.7	0.0045	12.09
PRIME BANK LTD.	-0.0003	-0.0297	0.0000	0.0004	25.9	0.0075	19.88
NATIONAL BANK LIMITED.	-0.0004	-0.0494	0.0000	0.0004	12.9	0.0037	9.86
EXPORT IMPORT BANK OF BD. LTD.	-0.0002	0.0368	0.0000	0.0004	17.4	0.0050	13.56
INTERNATIONAL FINANCE INVESTMENT AND COMMERCE BANK LIMITED	-0.0006	0.1446	0.0000	0.0004	17.8	0.0052	14.22
PUBALI BANK LIMITD.	-0.0001	0.0065	0.0000	0.0004	30.0	0.0087	23.22
DHAKA BANK LIMITED.	-0.0001	0.0039	0.0000	0.0004	21.5	0.0062	16.63
AL-ARAFAH ISLAMI BANK LTD.	0.0000	0.0386	0.0000	0.0004	25.0	0.0072	19.49
AB BANK LIMITED	**-0.0003**	0.0236	0.0000	0.0004	21.4	0.0062	16.63
ONE BANK LIMITED	0.0000	0.0082	0.0000	0.0004	23.8	0.0069	18.43
BANK ASIA LIMITED	0.0000	0.1393	0.0000	0.0004	22.7	0.0066	18.11
SHAHJALAL ISLAMI BANK LTD.	0.0001	0.0253	0.0000	0.0004	31.8	0.0092	24.71
MUTUAL TRUST BANK LTD.	0.0004	-0.0206	0.0000	0.0004	34.6	0.0100	26.61
EASTERN BANK LIMITED.	0.0004	0.0665	0.0000	0.0004	50.4	0.0146	39.54
DUTCH BANGLA BANK LTD.	0.0002	-0.0181	0.0000	0.0004	148.4	0.0430	114.20
BRAC BANK LTD.	0.0009	-0.0094	0.0000	0.0004	104.9	0.0304	80.89
INTERNATIONAL LEASING & FINANCIAL SERVICES LTD.	0.0001	0.0812	0.0000	0.0004	22.5	0.0065	17.71
Bay Leasing & Investment Limited	-0.0002	-0.0411	0.0000	0.0004	28.0	0.0081	21.44
LankaBangla Finance Ltd.	-0.0002	0.0621	0.0000	0.0004	48.8	0.0141	38.25
PRIME FINANCE & INVESTMENT LTD.	-0.0008	0.0826	0.0000	0.0004	11.9	0.0034	9.37
PEOPLES LEASING & FINANCIAL SERVICES LTD.	-0.0007	0.0040	0.0000	0.0004	13.8	0.0040	10.67
PHOENIX FINANCE AND INVESTMENT LTD.	-0.0002	0.1408	0.0000	0.0004	37.6	0.0109	30.01
UTTARA FINANCE AND INVESTMENT COMPANY LIMITED	-0.0001	-0.0086	0.0000	0.0004	73.1	0.0212	56.38
MIDAS FINANCING LIMITED	0.0000	0.1286	0.0000	0.0004	47.3	0.0137	37.65
ISLAMIC FINANCE & INVESTMENT LTD.	-0.0001	0.0750	0.0000	0.0004	20.9	0.0061	16.43
IDLC FINANCE LIMITED	-0.0001	0.1767	0.0000	0.0004	85.3	0.0247	68.67
Union Capital Limited	-0.0003	0.0909	0.0000	0.0004	21.0	0.0061	16.57
GSP Finance Company (Bangladesh) Limited	-0.0001	0.0426	0.0000	0.0004	30.7	0.0089	23.95
BANGLADESH FINANCE AND INVESTMENT COMPANY LTD.	-0.0003	-0.0356	0.0000	0.0004	21.8	0.0063	16.71
PREMIER LEASING & FINANCE LTD.	0.0000	-0.0716	0.0000	0.0004	17.5	0.0051	13.31
National Housing Finance and Investments Ltd.	0.0002	-0.0459	0.0000	0.0004	47.8	0.0139	36.55
Delta Brac Housing Finance Corporation Ltd.	0.0008	-0.0019	0.0000	0.0004	136.1	0.0394	105.12
EASTERN HOUSING LIMITED	0.0001	0.0762	0.0000	0.0004	51.3	0.0149	40.34
MEGHNA CONDENSED MILK INDUSTRIES LTD.	0.0006	0.1754	0.0000	0.0004	24.7	0.0072	19.88
AGRANI INSURANCE CO. LTD.	-0.0003	0.0888	0.0000	0.0004	20.7	0.0060	16.32

ASIA INSURANCE LIMITED	**-0.0003**		-0.1566		0.0000	0.0004	23.1	0.0067	17.24
Continental Insurance Ltd.	-0.0003		0.0736		0.0000	0.0004	22.1	0.0064	17.37
Padma Islami Life Insurance Limited	-0.0002		0.0451		0.0000	0.0004	48.8	0.0141	38.10
PURABI GENERAL INSURANCE COMPANY LIMITED	-0.0010		0.1043		0.0000	0.0004	17.3	0.0050	13.69
EASTERN INSURANCE COMPANY LIMITED	-0.0002		0.0059		0.0000	0.0004	29.1	0.0084	22.52
FAREAST ISLAMI LIFE INSURANCE CO.	-0.0003		-0.0118		0.0000	0.0004	70.0	0.0203	53.95
MERCANTILE INSURANCE CO. LTD.	-0.0002		0.0237		0.0000	0.0004	26.3	0.0076	20.43
EASTLAND INSURANCE COMPANY LIMITED	-0.0007		0.1500		0.0000	0.0004	24.1	0.0070	19.28
MEGHNA LIFE INSURANCE CO. LTD.	-0.0005		0.0166		0.0000	0.0004	58.5	0.0170	45.38
POPULAR LIFE INSURANCE CO. LTD.	-0.0006		0.2137		0.0000	0.0004	70.7	0.0205	57.42
PIONEER INSURANCE COMPANY LTD.	-0.0007		0.0700		0.0000	0.0004	30.1	0.0087	23.64
PEOPLES INSURANCE COMPANY LIMITED	-0.0002		-0.0541		0.0000	0.0004	21.0	0.0061	16.03
FEDERAL INSURANCE COMPANY LIMITED	-0.0006		-0.0255		0.0000	0.0004	12.7	0.0037	9.76
PHOENIX INSURANCE COMPANY LIMITED	-0.0006		0.1299		0.0000	0.0004	29.9	0.0087	23.81
NATIONAL LIFE INSURANCE COMPANY LIMITED	-0.0005		-0.1040		0.0000	0.0004	156.7	0.0454	118.29
PROGRESSIVE LIFE INSURANCE CO. LTD	-0.0004		0.1254		0.0000	0.0004	72.2	0.0209	57.43
NORTHERN GENERAL INSURANCE CO. LTD.	-0.0005		0.1081		0.0000	0.0004	23.6	0.0068	18.70
Sunlife Insurance Company Limited	-0.0010		0.0176		0.0000	0.0004	24.9	0.0072	19.32
RELIANCE INSURANCE LIMITED	-0.0004		0.0877		0.0000	0.0004	55.9	0.0162	44.07
PROVATI INSURANCE COMPANY LIMITED	-0.0004		-0.0899		0.0000	0.0004	19.6	0.0057	14.84
NITOL INSURANCE CO. LTD	-0.0002		0.1370		0.0000	0.0004	33.3	0.0096	26.56
GREEN DELTA INSURANCE COMPANY LIMITED	-0.0001		0.0386		0.0000	0.0004	62.0	0.0180	48.33
Republic Insurance Company Ltd.	-0.0004		0.0429		0.0000	0.0004	26.5	0.0077	20.68
RUPALI INSURANCE COMPANY LIMITED	-0.0007		0.0030		0.0000	0.0004	20.4	0.0059	15.77
RUPALI LIFE INSURANCE CO. LTD.	-0.0008		0.0175		0.0000	0.0004	48.0	0.0139	37.24
SANDHANI LIFE INSURANCE COMPANY LIMITED	-0.0009		0.0228		0.0000	0.0004	31.1	0.0090	24.16
SONAR BANGLA INSURANCE LTD.	-0.0004		-0.1013		0.0000	0.0004	18.3	0.0053	13.82
Islami Insurance BD. Limited	0.0000		0.0213		0.0000	0.0004	32.3	0.0094	25.08
GLOBAL INSURANCE LTD.	-0.0007		0.0400		0.0000	0.0004	15.7	0.0045	12.24
UNITED INSURANCE COMPANY LIMITED	-0.0004		-0.0351		0.0000	0.0004	29.2	0.0085	22.39
PRIME ISLAMI LIFE INSURANCE LTD.	-0.0006		0.0176		0.0000	0.0004	52.6	0.0152	40.81
KARNAPHULI INSURANCE COMPANY LIMITED	-0.0005		-0.0379		0.0000	0.0004	18.6	0.0054	14.25
SUMMIT POWER LTD.	-0.0003		-0.0690		0.0000	0.0004	36.4	0.0105	27.69
TITAS GAS TRANSMISSION & DIST. CO. LTD.	-0.0003		-0.0217		0.0000	0.0004	44.8	0.0130	34.45

Power Grid Company of Bangladesh Ltd.	0.0000	-0.0372	0.0000	0.0004	54.2	0.0157	41.53		
Dhaka Electric Supply Company Ltd.	-0.0004	0.0105	0.0000	0.0004	46.4	0.0134	35.94		
GBB Power Ltd.	-0.0005	-0.1356	0.0000	0.0004	19.6	0.0057	14.69		

Descripted Statistic

Table-1

Chemical Industry

Mean	0.000	0.000	-0.001	0.001	0.001	0.001	0.001	0.000	-0.001	0.001
Standard Error	0.001	0.001	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Median	0.000	0.000	-0.004	0.000	-0.001	-0.002	-0.002	-0.003	-0.002	-0.001
Mode	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Standard Deviation	0.024	0.023	0.026	0.017	0.024	0.027	0.027	0.028	0.022	0.023
Sample Variance	0.001	0.001	0.001	0.000	0.001	0.001	0.001	0.001	0.000	0.001
Kurtosis	2.081	2.391	6.697	5.058	3.337	1.946	4.554	1.699	36.288	17.798
Skewness	0.540	0.464	-0.046	0.651	0.848	0.694	1.020	0.674	-3.008	-0.272
Range	0.176	0.197	0.291	0.200	0.190	0.182	0.303	0.210	0.350	0.399
Minimum	-0.081	-0.103	-0.196	-0.110	-0.094	-0.087	-0.113	-0.115	-0.255	-0.204
Maximum	0.095	0.094	0.094	0.091	0.096	0.095	0.190	0.095	0.095	0.195
Sum	-0.316	-0.435	-0.842	1.152	0.926	0.652	0.714	0.379	-0.627	1.269
Count	1203	1203	1203	1203	1203	1203	1203	1203	1203	1203

Table-2

Bank Industry

Mean	-0.0003	-0.0001	0.0010	0.0002	-0.0020	0.0000	-0.0002	0.0004	0.0000	0.0007	0.0000	-0.0004
Standard Error	0.0010	0.0007	0.0011	0.0005	0.0020	0.0010	0.0008	0.0005	0.0008	0.0006	0.0006	0.0007

Median	0.0000	-0.0020	0.0000	0.0000	-0.0024	0.0000	0.0000	-0.0008	-0.0045	0.0000	0.0000	-0.0025
Mode	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation	0.0351	0.0239	0.0398	0.0169	0.0687	0.0338	0.0274	0.0168	0.0273	0.0225	0.0202	0.0230
Sample Variance	0.0012	0.0006	0.0016	0.0003	0.0047	0.0011	0.0008	0.0003	0.0007	0.0005	0.0004	0.0005
Kurtosis	4.3177	5.0040	6.7928	5.1901	951.2589	6.7659	3.3443	5.6017	1.4088	6.4331	6.2259	27.0018
Skewness	-0.4575	0.7769	-0.3701	0.5764	-29.0904	-0.1753	0.2669	0.7697	0.7218	-0.0410	0.1020	-2.0483
Range	0.3486	0.2772	0.5664	0.1792	2.3874	0.4380	0.2757	0.1921	0.1817	0.3001	0.2376	0.3665
Minimum	-0.2231	-0.1026	-0.3514	-0.0840	-2.2460	-0.2932	-0.1804	-0.0886	-0.0854	-0.1813	-0.1423	-0.2674
Maximum	0.1254	0.1747	0.2150	0.0952	0.1414	0.1447	0.0953	0.1035	0.0963	0.1188	0.0953	0.0991
Sum	-0.3630	-0.1372	1.2560	0.2579	-2.3492	-0.0286	-0.1818	0.5076	0.0503	0.8051	0.0412	-0.4463
Count	1203	1203	1203	1203	1203	1203	1203	1203	1203	1203	1203	1203

Table-3

Insurance Companies

Mean	-0.00015	0.00013	-0.00027	0.000423	-0.00039	-0.00101	6.13E-05	-0.0001	0.000158	-0.00047	-6.2E-05	-0.00017
Standard Error	0.00052	0.000695	0.00065	0.00508	0.00737	0.00778	0.00797	0.00784	0.00653	0.00808	0.00575	0.00715
Median	0	-0.00114	0	9.09E-05	0	0	-0.00286	-0.00164	-0.00224	-0.00149	-0.00167	0
Mode	0	0	0	0	0	0	0	0	0	0	0	0
Standard Deviation	0.018043	0.024116	0.022544	0.017633	0.025559	0.026999	0.027633	0.027191	0.022659	0.028042	0.019941	0.0248
Sample Variance	0.000326	0.000582	0.000508	0.000311	0.000653	0.000729	0.000764	0.000739	0.000513	0.000786	0.000398	0.000615
Kurtosis	6.846065	37.32055	2.307408	46.30775	2.357285	3.225804	3.080288	4.306746	3.524902	57.52918	4.524756	6.58751

Skewness	-0.34568	-2.41262	0.537765	-3.43675	0.33863	0.832565	0.510226	0.197948	0.680875	-3.03315	0.759981	-0.02387
Range	0.216897	0.459403	0.19305	0.306598	0.217425	0.272415	0.249461	0.25418	0.199926	0.654221	0.201797	0.281329
Minimum	-0.12234	-0.2948	-0.09819	-0.22254	-0.12268	-0.13036	-0.15415	-0.15887	-0.10501	-0.44052	-0.10668	-0.18602
Maximum	0.094559	0.164603	0.094858	0.084058	0.094745	0.142053	0.09531	0.09531	0.094917	0.213702	0.095113	0.09531
Sum	-0.1772	0.156227	-0.32876	0.508312	-0.46906	-1.21242	0.073732	-0.12374	0.190225	-0.56711	-0.07479	-0.20419
Count	1203	1203	1203	1203	1203	1203	1203	1203	1203	1203	1203	1203

Table-4

Non Finance Companies

Mean	-0.0011	0.0005	-0.0003	-0.0003	-0.0005	-0.0003	0.0002	0.0001	-0.0004	-0.0001	-0.0001	-0.0007
Standard Error	0.0009	0.0010	0.0005	0.0006	0.0007	0.0006	0.0008	0.0007	0.0009	0.0007	0.0007	0.0007
Median	0.0000	0.0000	-0.0019	0.0000	0.0000	-0.0012	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0035
Mode	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation	0.0301	0.0342	0.0164	0.0210	0.0242	0.0200	0.0273	0.0243	0.0298	0.0237	0.0239	0.0247
Sample Variance	0.0009	0.0012	0.0003	0.0004	0.0006	0.0004	0.0007	0.0006	0.0009	0.0006	0.0006	0.0006
Kurtosis	68.3712	9.8101	5.2575	3.0448	21.2357	23.6267	1.8198	4.1071	6.2623	2.6358	10.1406	4.4885
Skewness	-3.5302	-0.8559	0.4253	0.4779	-1.0076	-1.7574	0.4067	0.4740	-0.2215	0.7760	-0.5918	0.2090
Range	0.6051	0.4636	0.1980	0.1913	0.4374	0.2974	0.2007	0.2765	0.4392	0.1794	0.2968	0.2444

Minimum	-0.5098	-0.2805	-0.1027	-0.0960	-0.2928	-0.2043	-0.1054	-0.1027	-0.2338	-0.0841	-0.2015	-0.1484
Maximum	0.0953	0.1831	0.0953	0.0953	0.1446	0.0931	0.0953	0.1738	0.2054	0.0953	0.0953	0.0959
Sum	-1.3831	0.6105	-0.4062	-0.4153	-0.5519	-0.3964	0.1811	0.0685	-0.4890	-0.1488	-0.0946	-0.8335
Count	1203.0000	1203.0000	1203.0000	1203.0000	1203.0000	1203.0000	1203.0000	1203.0000	1203.0000	1203.0000	1203.0000	1203.0000

Table-5

Pharmaceuticals Companies

Mean	-0.00038	0.001244	-0.0005	0.000318	-0.00098	0.000532	-0.00071
Standard Error	0.000934	0.000499	0.000695	0.001162	0.000769	0.00069	0.000745
Median	-0.00394	0	0	0	-0.00174	-0.00168	0
Mode	0	0	0	0	0	0	0
Standard Deviation	0.03238	0.017318	0.024102	0.040305	0.026656	0.023923	0.025848
Sample Variance	0.001048	0.0003	0.000581	0.001625	0.000711	0.000572	0.000668
Kurtosis	1.783036	3.289805	4.293781	76.20943	5.706011	6.36158	3.906405
Skewness	0.607264	0.804948	-0.03968	0.652884	0.116639	0.44082	0.429419
Range	0.301578	0.165813	0.271033	1.179032	0.339226	0.283069	0.270252
Minimum	-0.14609	-0.07657	-0.17794	-0.57661	-0.21001	-0.18786	-0.17494
Maximum	0.155485	0.089243	0.09309	0.602418	0.129212	0.095211	0.09531
Sum	-0.45988	1.496604	-0.60086	0.383053	-1.18454	0.639662	-0.85751
Count	1203	1203	1203	1203	1203	1203	1203

Table-6

Power Industry

Mean	0.000	0.000	0.001	0.000	0.001	0.000	0.000	-0.001	0.000	0.001
Standard Error	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Median	0.000	0.000	-0.002	-0.002	-0.003	0.000	-0.002	0.000	0.000	0.000
Mode	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Standard Deviation	0.029	0.019	0.030	0.030	0.037	0.024	0.023	0.026	0.022	0.020
Sample Variance	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000

Kurtosis	6.901	7.783	105.979	18.908	13.484	9.265	3.202	10.744	4.525	21.889
Skewness	-0.691	-0.328	0.142	0.099	-0.705	-0.096	0.540	-0.514	0.643	-1.674
Range	0.365	0.250	0.965	0.600	0.565	0.330	0.212	0.313	0.225	0.304
Minimum	-0.220	-0.162	-0.488	-0.297	-0.417	-0.235	-0.117	-0.218	-0.129	-0.210
Maximum	0.145	0.088	0.477	0.303	0.148	0.095	0.095	0.094	0.095	0.094
Sum	-0.420	0.165	0.778	-0.131	0.900	-0.498	-0.569	-1.280	0.303	1.128
Count	1203	1203	1203	1203	1203	1203	1203	1203	1203	1203
Confidence Level(95.0%)	0.002	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001

Correlation

Table-1

Chemical Industry

C	**CVO**	**Salvo**	**KOHINOOR**	**Global**	**ACI**	**APEX**	**ANLIMA.**	**ANWAR**	**Active Fine Chemicals Ltd**	**ADVANCED**
Column 1	1									
Column 2	0.169	1.000								
Column 3	0.145	0.325	1.000							
Column 4	0.004	0.054	0.023	1.000						
Column 5	0.164	0.084	0.085	0.044	1.000					
Column 6	0.079	0.140	0.065	0.024	0.128	1.000				
Column 7	0.013	0.041	-0.006	0.107	0.098	0.133	1.000			
Column 8	0.116	0.236	0.191	-0.033	0.043	0.118	0.009	1.000		
Column 9	0.197	0.166	0.088	-0.011	0.211	0.080	0.027	0.091	1.000	
Column 10	0.103	0.036	0.030	0.066	0.508	0.122	0.120	-0.018	0.084	1

Table-2

Pharmaceuticals Companies

	Column 1	*Column 2*	*Column 3*	*Column 4*	*Column 5*	*Column 6*	*Column 7*
Column 1	1						
Column 2	-0.02125	1					
Column 3	0.192205	0.01232	1				
Column 4	0.118278	-0.02238	0.061384	1			
Column 5	0.145713	-0.02168	0.084439	0.077417	1		
Column 6	0.110395	-0.00714	0.060028	0.003852	0.016443	1	
Column 7	0.270168	0.032737	0.250548	0.092325	0.093872	0.025851	1

Table-3

Insurance Company

	Column 1	*Column 2*	*Column 3*	*Column 4*	*Column 5*	*Column 6*	*Column 7*
Column 1	1						
Column 2	0.07251	1					
Column 3	0.175997	0.109701	1				
Column 4	0.131125	0.081513	0.130241	1			
Column 5	0.098504	0.031791	0.082551	0.008195	1		
Column 6	-0.02976	-0.0312	-0.03206	-0.00055	0.007922	1	
Column 7	0.140832	0.078824	0.215126	0.089717	0.031855	0.009807	1

Table-4

Power Industry

	Column 1	*Column 2*	*Column 3*	*Column 4*	*Column 5*	*Column 6*	*Column 7*
Column 1	1						
Column 2	0.08723	1					
Column 3	0.017677	0.117331	1				
Column 4	0.105648	0.117312	0.036531	1			
Column 5	0.022097	0.016914	0.051743	0.038539	1		
Column 6	0.113416	0.381557	0.109005	0.134236	0.056771	1	
Column 7	-0.00771	0.04433	0.107045	0.011791	0.054934	-0.01165	1