Project Dissertation

On

A study on the relationship between the CPSE ETF and NIFTY CPSE and the volatility of the CPSE ETF

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CERTIFICATE FROM THE INSTITUTE

This is to certify that the project dissertation report titled "A study on the relationship between the CPSE ETF and NIFTY CPSE and the volatility of the CPSE ETF" is a bona fide work carried out by Ms. Puja Roy Chowdhury of MBA 2015-17 and submitted to Delhi School of Management, Delhi Technological University, Bawana Road, New Delhi-110042 in partial fulfilment of the requirement for the award of the Degree of Masters of Business Administration.

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DECLARATION

I, Puja Roy Chowdhury, student of MBA 2015-17 of Delhi School of Management, Delhi Technological University, Bawana Road, Delhi-110042, declare that the project dissertation report on "A study on the relationship between the CPSE ETF and NIFTY CPSE and the volatility of the CPSE ETF", submitted in partial fulfilment of Degree of Masters of Business Administration is the original work conducted by me.

The information and data given in the report is authentic to the best of my knowledge. This Report is not being submitted to any other University for award of any other Degree, Diploma and Fellowship.

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Place:

Date:

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Puja Roy Chowdhury
DSM, 2015-2017

EXECUTIVE SUMMARY

The report titled "A study on the relationship between the CPSE ETF and NIFTY CPSE and the volatility of the CPSE ETF" is a report based on the case study carried out by me on the relationship between the CPSE ETF and NIFTY CPSE. It is a part of the course work of 4th semester, to be submitted as a requirement of the MBA program of Delhi School of Management, Delhi Technological University. The objectives of the report are to compare and analyse the correlation and variance between CPSE ETF and NIFTY CPSE and to study the volatility of the CPSE ETF over the course of four years and also as compared to its market price.

This Report is divided into seven chapters. The first chapter of this study deals with introduction that presents the introduction to ETF and the description on their underlying index and how they are related to each other. It also talks about the volatility that drives the market. This chapter also introduces with the purpose and objective of the study. The second chapter of the report presents the literature review. This talk about the various studies that have been conducted in the past with respect to ETF and risks, return and volatility related to it. Few papers are based on the Indian scenario and helps in understanding the volatility of the ETF in the Indian market. It also talk about the history of the CPSE ETF and the purpose of its introduction in the Indian market. Literature also tells us about the various techniques to be followed in order to test the objectives of the study. The third chapter is about the research methodology and the data collection and techniques carried out for the analysis. The fourth chapter gives the test results and their analysis. Variance and correlation are calculated to analyse the relationship between CPSE ETF and NIFTY CPSE. Also, volatility of the CPSE ETF over the course of four years is calculated to test its performance in the market and the beta as compared to the market is calculated to analyse its volatility and riskiness. The fifth chapter summarizes the findings and also provides recommendations of the basis of the analysis carried out in the previous chapter. The sixth chapter is on bibliography. This report is winded up with seventh chapter on annexure that contains Excel workbook showing calculation of volatility.
The variance and correlation calculated for CPSE ETF and NIFTY CPSE shows that the ETF and its underlying index are directly related to each other. The analysis

shows that CPSE ETF and its underlying are positively correlated to each other and their movement in the market is always in the same direction, where the ETF yield more returns as compared to its index. CPSE ETF performs better than its underlying index.

The beta calculated for the CPSE ETF shows that it is less volatile than the market. It is less risky than the index its positive value shows that the CPSE ETF moves in same direction as that of the market. Over the course of four years since its inception, the volatility as compared to the time is plunging.

Hence, the investment in the CPSE ETF is concluded to be a safe and better option as compared to the investment in its underlying or in the individual securities in the portfolio.

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Chapter - 1

1. Introduction

ETFs are the new generation financial innovation whose market is expanding more and more with each passing day. It traces an index and get priced and traded throughout the trading day.Indian ETF market is the second largest growing ETF market in the world. It is due to the new Government and their schemes, ETFs are gaining more popularity in the Indian market. One of such scheme is its disinvestment programme in which they have introduced CPSE ETF.

CPSE ETF is the specially designed exchange traded fund by the Government of India as part of their disinvestment programme for selling the equity stakes in PSUs to raise cash. It's portfolio has ten companies i.e., Oil & Natural Gas Corporation Limited, Coal India Limited, Indian Oil Corporation Limited, GAIL(India)Limited, Power Finance Corporation Limited, Rural Electrification Corporation Limited, Container Corporation of India Limited, Bharat Electronics Limited, Oil India Limited and Engineers India Limited.

1.1. Problem of the study

This study majorly finds the solution for the problem that whether it is profitable to invest in an ETF or its underlying index. This study is conducted on the CPSE ETF and NIFTY CPSE to determine which one of it is profitable. Also, it deals with the problem of determining the volatility of the CPSE ETF in terms of the change in price over time as well as in comparison to the market.

1.2. Rationale

This project defines the correlation as well as the variance between the CPSE ETF and NIFTY CPSE. It describes that the movement of both of them are always in the same direction and the return yield by CPSE ETF is more than the NIFTY CPSE.

It also shows that the volatility over the course of four years for CPSE ETF is plunging which shows that the stock prices are increasing during this period.

Also, beta has been calculated for the CPSE ETF, which shows that it is less volatile than the market as it is less than 1.

All these analysis shows that CPSE ETF is a profitable venture as compared to the NIFTY CPSE.

1.3. Objectives

This research paper is basically about analyzing CPSE ETF and NIFTY CPSE, its underlying index. CPSE ETF traces the NIFTY CPSE to get valued and priced and traded throughout the trading day.

A comparison between CPSE ETF and NIFTY CPSE is shown and analyzed how they are related and the affect each other. It is shown in a graphical representation that both of them are directly proportional to each other. Also, the volatility of the CPSE ETF is studied by analyzing its daily closing price for four years and has been shown how it has dropped during all these years.

The study has majorly three folds:

I. Comparing and analyzing CPSE ETF and NIFTY CPSE on the basis of their return for four years.
II. Showing how the CPSE ETF and its underlying index, NIFTY CPSE is correlated with each other.
III. Analyzing the volatility in the price of CPSE ETF over the course of four years.

All these analysis are done using statistical algorithms and later has been depicted using graphical representation.

1.4. Research Methodology

The data for the study is collected from the NSE site for the course of four years for both the CPSE ETF and NIFTY CPSE, because CPSE ETF was introduced in 2014.

The various calculation involved in this project was of average return calculation and using MS-Excel to draw its graph showing that both of them moves in the same direction, but CPSE ETF always outperform NIFTY CPSE.

Then volatility of the CPSE ETF is calculated with the help of the natural logarithmic price change of it over the course of time. This calculation basically shows that the volatility of CPSE ETF is plunging over the course of time.

At the end beta for CPSE ETF is analyzed as compared to the market. The beta value comes less than the 1 which shows that it is less volatile than the market.

Overall it shows that the CPSE ETF is less volatile and high yielding portfolio as compared to the portfolio of its underlying index, NIFTY CPSE.

1.5. Plan of the study

First an intensive market research is done on the ETF and the CPSE ETF and its underlying index. It was done to analyze why Government of India introduced it in the market. The second step was of designing the methodology and different tests to be done during the course of the project. We decided to find correlation and variance on the CPSE ETF and NIFTY CPSE and later to check the volatility of the CPSE ETF. The third step was of data collection from different authentic sites and also to study, how different techniques can be applied on these data. Last step was of using these techniques on the data and analyze the results and determine findings on the basis of these and then recommending on the basis of these findings that which one of them is a profitable venture.

Chapter - 2

2. Literature Review

An investment fund trading on the stock exchanges is known as the Exchange traded funds (ETFS). Stocks, commodities, bonds like assets are held by the ETFs. Over the course of the trading day, the trades close to the net asset value of the underlying stocks that it represent. Majority of the ETFs tracks an index like stock index or bond index.

ETF is a new variety of mutual fund which was made available first in 1993 as Standard & Poor's Depositary Receipts that tracks S&P 500, which became the largest ETF in the world. ETFs are priced and traded continuously throughout the trading day, unlike mutual funds. Like common stocks, ETFs can be bought on margin, sold short or held for the long-term.

Among all the financial products, ETFs are the most rapidly growing class, which is also of interest to public finance researchers who are concerned with taxation and portfolio behavior because of majorly two reasons. First, ETFs are new financial innovations and are also the prototype for the mutual fund industry evolution. Hence, it is necessary to understand their tax treatment and after tax returns. Second, ETFs are known for being "tax efficient" as compared to the traditional equity mutual funds. ETFs may move closer to the consumption-tax treatment of corporate capital income by basically reducing tax burden on corporate stocks investments. ETFs market is growing rapidly, eventually dominating trading activity on American Exchanges.

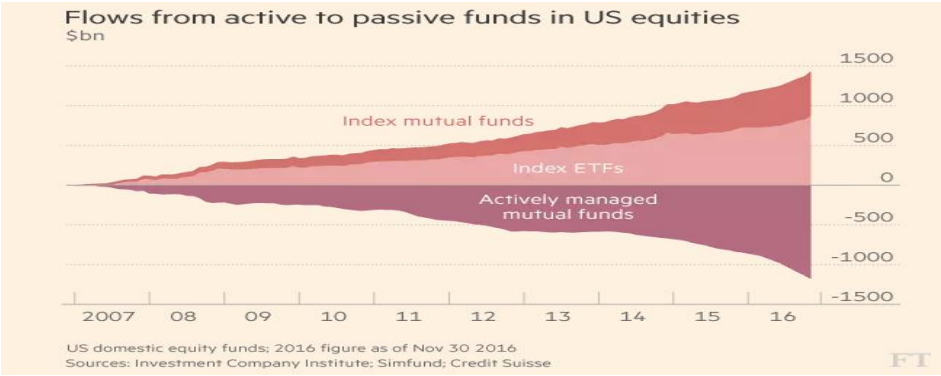

Figure 1: US Domestic Equity Funds, 2016

But, ETFs has its own drawbacks. In last few months, volatility has plunged and passive investment has spiked and the reason predicted behind is the rise of ETFs. The one quality that can characterize the last year capital market will be the low level of volatility.

The growth of ETF trading is impacting the financial market, massively. On August 24 more than a fifth of all US-listed ETFs were forced to stop trading after the Dow Jones Industrial Average dropped nearly 1,100 points in the first few minutes of the day and then rebounded by almost 600 points minutes later. US regulators are still struggling to understand how to prevent a repeat of the event, which left many retail investors nursing losses.

The ETFs has international limitations. US has a plethora of ETF products, but there are many countries that have a few exchange traded funds in which to invest and they offer Market ETFs that usually includes large-cap products leaving a lack of mid and small sized funds.

Also the ETFs tracked, priced and traded throughout the trading day which makes it unsuitable for the long-term investor's strategy. It becomes more of an advantage for short-term traders as compared to the long term traders.

ETFs are traded throughout the trading day and they incur commission charges every time they are bought and sold, which makes it more expensive than trading individual stocks, since stocks do not have management fees.

ETFs track a broader market, so the overall dividend yield will average out to be lower if compared with the high-yielding stock or a group of stocks. The risks associated with the ETFs might be lower, but if the investor takes risks and invest in a high yielding stock or a group of stocks, then the dividend yield will be much more than the ETF.

ETFs have its own pros and cons, but it is a new age financial innovation which is gaining popularity, growing rapidly and impacting market on daily basis. So, an investment in ETF is worth considering.

2.1. The Mechanism of ETFs

Mutual funds and ETFs are very different from each other. From various categories of investors, shares of the companies comprising the index are taken by the ETF sponsors, the Asset Management Company, instead of selling it to the public for cash. A large block of ETF unit called “Creation Unit” is issued to them in exchange of a “Portfolio Deposit” of stocks and “Cash Component”.

Unlike traditional mutual funds, the number of outstanding ETFs is not limited. If investors deposit shares in order to create ETF units, then number of outstanding ETF might increase and it reduces, if some ETF holder redeems their ETF units for the underlying shares. By sending creation/redemption instructions to the fund, such transactions are conducted.

Continuous creation and redeem of ETFs unit are done based on the demand of the investors. These ETFs are used for investment, trading or arbitrage by the investors. The value of the underlying asset is tracked by the ETF andan opportunity to compare the price of ETF unit prevailing in the market and the value of its underlying index is provided to the investors. In exchange of higher priced securities the unit might be redeemed to the sponsors by the investors, in case of underlying index outperforming the ETF. ETF units might be constructed by the investors, if ETFs outperform underlying securities, by lower priced securities deposits. The problem with theclosed-end mutual funds viz. the premium or discount to the NAV is eliminated by this arbitrage mechanism.

To acquire new securities, it is an efficient and fair way for funds, which is the major benefit of the mechanism of creation/redemption.

Also, the trading cost and fees and an additional fee to the ETF provider for the paperwork of creation/redemption activity are paid by the AP.

ETFs are hence almost similar to the mutual funds but it offers a lot more benefits as compared to the mutual funds.

2.2. Indian ETF Market

Investment is done by Indian ETFs which are domiciled in India. Due to massive population and growth potential, India is considered as one the major emerging markets in the world. India is now having the second largest growing exchange traded funds market, behind Japan. In three years, it has an assets more than doubling to $4 billion from $1.9 billion. It is majorly due to the greater adoption of ETFs to gain low-cost market exposure, but the third boost came from the Reliance Mutual Fund's CPSE ETF.

India's 10 fastest-growing ETFs

Name	Assets 3 years ago ($ mn)	Assets today ($ mn)	Increase (%)
SBI Sensex ETF	0.7	608.2	89,941
ICICI Prudential Nifty iWIN	1	131.9	13,199
Birla Sun Life Nifty ETF	0.2	26.7	10,595
Kotak Banking ETF	5.1	408.9	7,984
Kotak Nifty 50	7.2	92.5	1,184
ICICI Prudential Sensex iWIN	0.5	5.5	1,030
R*Shares CPSE ETF	391.9	1,179.30	201
R*Shares PSU Bank BeES	7.8	14.6	87
R*Shares Liquid BeES	127	213	68
R*Shares Gold BeES	308.7	421.5	37
Total	1,873.1	3,944.8	111

*Reliance MF

Source: Bloomberg Intelligence

Figure 2: India's 10 fastest growing ETFs

ETFs scheme launched on NSE are:

1. Equity
2. Gold
3. Debt
4. World Indices

ETFs scheme launched on BSE are:

1. Equity
2. Gold
3. Liquid

In 2017, Indian ETFs are the best performers in the space of the emerging ETF market. As per the International Monetary Fund, India will become the fastest growing major economy in the world by growing at 7.2% in 2017 and 7.7% in 2018. Hence, foreign investors, being optimistic, are pouring their money in the Indian stocks due to economic growth and rise in structural reform.

The largest India ETF by assets, iShares MSCI India ETF, returned an eye-popping 17% this year, through April 16, as the stock market hit new highs. WisdomTree India Earnings ETF rallied 21% over the same period. Market Vectors Small-Cap India ETF vaulted a mind-blowing 35%. Sector-focused ETFs, Columbia India Consumer ETF and Columbia India Infrastructure ETF climbed 20% and 26%, respectively. India outpaced all the major global indexes.

The biggest reasons to invest in India and Indian ETFs are:

1. India is the world's fastest growing economy: It is the fastest growing G20 country. Since 2014, India has seen an increase of 7.5% yearly in its GDP.
2. India is reaping the rewards of demographic dividend: With an average age of 29, India will be youngest country in the world and nearly two-third of its population will be in working age group.
3. Prime Minister Narendra Modi leading the Government of India is embarking on epic business-friendly reforms: He will be in power until at least 2019 and is likely to boost plans to build more infrastructures and make economic reforms.
4. Indian household are increasingly saving money in stock-based investments like mutual funds: Indians increasingly invest in the stock market due to low yields in the debt market and weak outlooks on hard assets, which is pushing up the prices.
5. India's stock market is undervalued on several measures: In late 2007, the ratio of Bombay Stock Exchange SENSEX index of 30 blue chips to GDP was 158%, which now hovers at 62%, closer to its all time low of 40% and below its average of 77% and hence the India's stock market is undervalued.

6. INR is one of the most stable currencies since the emerging market currency sell-off of August 2013 and RBI will continue to do whatever it takes to keep it stable.

2.3. Central Public Sector Enterprises – Exchange Traded Funds (ETF)

CPSE ETF is the specially constructed fund to sell the equity stakes in PSUs for raising cash. It tracks the Nifty CPSE index. These are the open ended funds with no lock-in and can be bought and sold on a stock market. It is a pure equity investment and a minimum investment of Rs. 5000 is needed to be made. It is a passive fund which means that the proportion of the underlying assets will remain same. Hence, the portfolio of ETF, unlike mutual funds, remains same and is actively managed. Resultantly, ETFs have a low expense ratio. In the CPSE ETF's case, this ratio is 0.54%—lower than the expense ratio of a typical mutual fund which would range between 1-3%.

The portfolio of the CPSE ETF is made up of ten central PSUs which have a near monopolistic position in India. Most of these companies are in the energy sector which is important for the Indian economy. It makes the investment relatively low-risk. These companies have also been shortlisted for their high dividend pay-outs.

The government will use the funds raised by the CPSE exchange-traded fun to maintain planned expenditure without increasing the fiscal deficit.

Since the ETF's launch in 2014, the NAV has moved from `19.24, and has appreciated by 46%—most of which happened in 2016-17 period. In the Fresh Fund Offering in January, a discount of 5% had been offered to investors, which was lowered to 3.5% in the FFO in March. These discounts further increase the absolute returns of investors.

Like most ETFs, the CPSE ETF can be bought with a demat trading account. The CPSE ETF has provided attractive returns in the last one year of over 40%. However, it is an equity investment and is subject to market risks—especially any risks in the energy sector.

Equity	%age Holding
Oil & Natural Gas Corporation Limited	24.35
Coal India Limited	20.54
Indian Oil Corporation Limited	17.96
GAIL(India)Limited	11.17
Power Finance Corporation Limited	5.58
Rural Electrification Corporation Limited	5.21
Container Corporation of India Limited	5.04
Bharat Electronics Limited	4.33
Oil India Limited	3.39
Engineers India Limited	2.26

Table1. Portfolio Holding of CPSE ETF

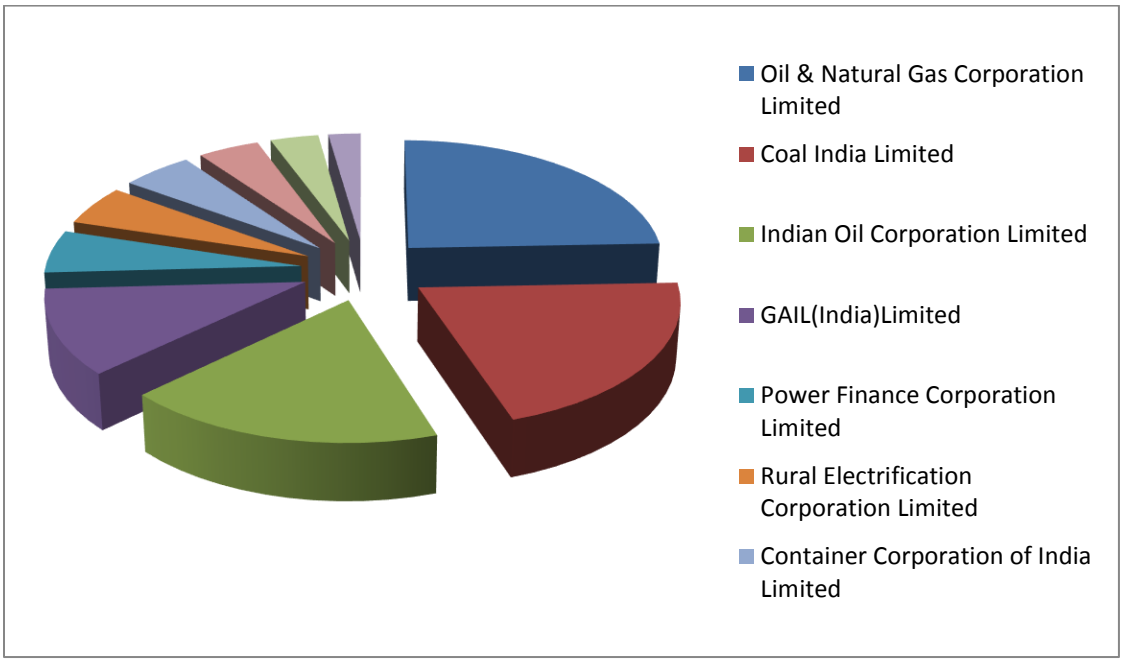

Figure 3: Pie Chart showing %age holding of CPSE ETF

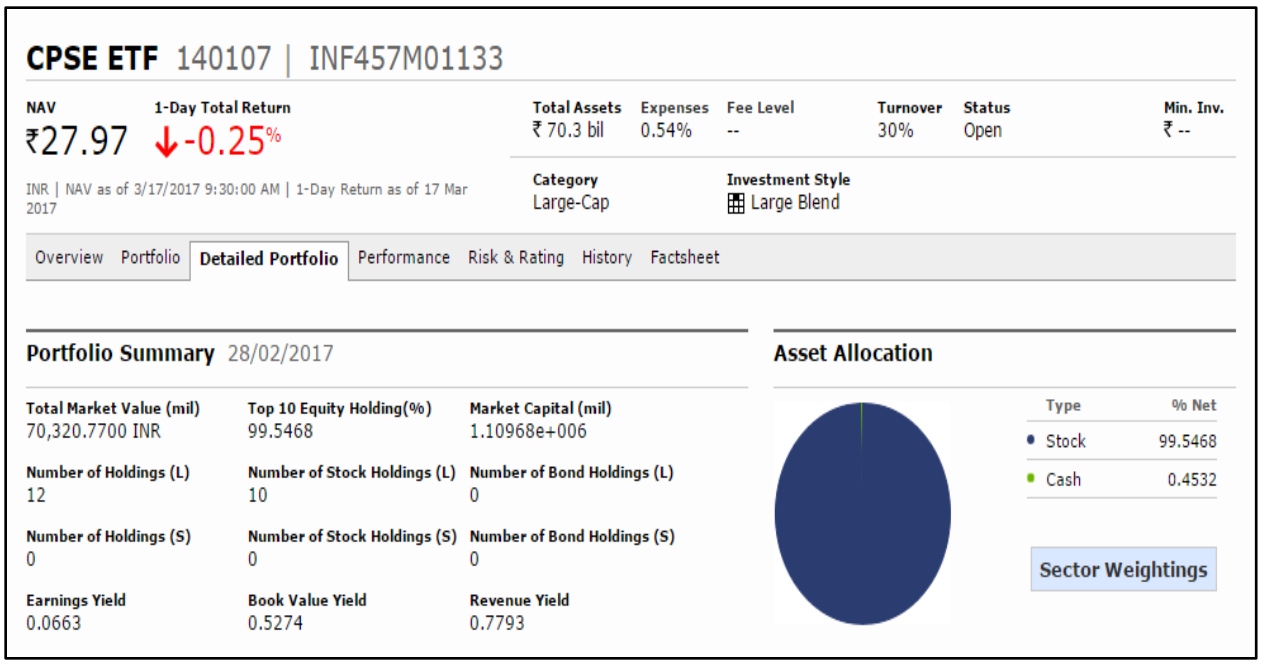

Table2. Portfolio Summary as on March 17, 2017

Detailed Portfolio

Name	Instrument	Sector	Weighting (%)	Market Value (mil)	Number of Shares	Prev Number of Shares	First Bought Date
Stock							
Oil & Natural Gas Corp Ltd	Equity	OIL	24.5880	17290.5000	89333503	93555355	31/03/2014
Coal India Ltd	Equity	MINERALS/MINING	19.6128	13791.8630	42845179	50330956	31/03/2014
Indian Oil Corp Ltd	Equity	PETROLEUM PRODUCTS	18.3521	12905.3420	33516016	40631589	31/03/2014
GAIL (India) Ltd	Equity	GAS	11.6459	8189.4540	15843402	18698615	31/03/2014
Rural Electrification Corp Ltd	Equity	FINANCE	5.7773	4062.6610	26614219	30685390	31/03/2014
Power Finance Corp Ltd	Equity	FINANCE	5.5381	3894.4580	28635717	33659227	31/03/2014
Container Corporation of India Ltd	Equity	TRANSPORTATION	4.9879	3507.5250	2884715	3340334	31/03/2014
Bharat Electronics Ltd	Equity	INDUSTRIAL CAPITAL GOODS	4.1124	2891.8800	1908076	2312520	31/03/2014
Oil India Ltd	Equity	OIL	2.9407	2067.9080	6321943	7348142	31/03/2014
Engineers India Ltd	Equity	CONSTRUCTION PROJECT	1.9916	1400.4900	9302493	11007868	31/03/2014
Total Stock			**99.5468**	**70002.0810**			
Cash							
Net Current Assets	Cash	-	0.2996	210.6870	-	-	-
CBLO	Cash - Collateral	-	0.1536	107.9980	-	-	-
Total Cash			**0.4532**	**318.6850**			
Grand Total			**100**	**70320.7660**			

Table3. Detailed Portfolio as on March 17, 2017

First tranche of CPSE ETF: Goldman Sachs Asset Management India had launched the first tranche of the CPSE ETF on March 18, 2014. It was an open ended Index Exchange Traded Scheme. It was a part of disinvestment programme of the Government of India and raised a sum of Rs. 3000 crore through this scheme.

On May 2, 2013, Central Public Sector Enterprise Exchange Traded Funds (CPSE ETF) was approved by Cabinet Committee on Economic Affairs (CCEA) of Government of India. It comprises of equity shares of Central Public Sector Enterprises and was launched as CPSE ETF mutual fund scheme.

Goldman Sachs Asset Management (India) Private Limited was appointed by the Government of India for the launching and managing of CPSE ETF as per the SEBI Regulations.

The objective of the investment of the scheme was to give returns before expenses. These returns correspond to the securities' total return present in the same proportion in the CPSE index.

In order to disinvest some of the stakes in the CPSE, the Government of India took the initiative of constructing CPSE Index. For disinvestment process ETF route was opted by the Government.The performance of CPSE Index will be tracked by CPSE ETF. Free float market capitalization method will be used to calculate the index values. Thebase date of 01-Jan-2009 and base value of 1000 was the index. On 2nd Monday of every quarter i.e., February, May, August and November, the weights of index constituent will be re-aligned i.e., capped at 25%.

The value of each unit on allotment the value of each unit was approximately 1/100th of the value of the CPSE index. The cash to be issued at premium i.e., approximately equal to the difference between face value and allotment price during the new fund offer (NFO) and at NAV based prices during the ongoing offer for which the scheme was offered units of Rs. 10/-.

18 March 2014 was the NFO period for the subscription for anchor investors and from 19 March to 21 March 2014 was the duration for non-anchor investors. For

continuous Subscription and Redemption of the scheme, it was opened on or before 11 April 2014.

A 54% on the buy price has been returned to the investors for the first tranche of the CPSE ETF.Since inception, CPSE ETF outperformed NIFTY CPSE by giving an annualized return of 14.2%, whereas NIFTY CPSE gave 6.25%.

Second Tranche of CPSE ETF: After Reliance Nippon Life AMC bought over Goldman's mutual fund business in India in 2015, it managed second tranche of CPSE ETF which was opened on January, 2017. Through this the Government of India aimed to garner Rs. 6000 crore. The issue size of the fund will be Rs4,500 crore, with the option of raising another Rs1,500 crore.

An overwhelming response was seen for the follow on public offer (FPO) of the second tranche of CPSE ETF from the investors. The net asset value (NAV) had the allotment price of Rs. 25.21, whereas it was opened at Rs. 26.75.

As compared to the units on offer, the second tranche of CPSE ETF received subscriptions twice in number, which helped Government to raise Rs. 6000 crores as disinvestment proceeds.

For anchor investors, almost 30% of the issue was reserved. Remaining 70 per cent was reserved for the retail investors.5% discount was offered on the second tranche of the CPSE ETF. One of the major advantages of CPSE ETF is in contrast with the 250basis points (bps) for other non-ETF products, CPSE ETF has the lower expense ratio of 6.5 bps.

Categories for Applications

Investor Type	Minimum Application Amount	Maximum Application Amount
Retail Individual Investors	Bid Value of Rs.5000 and in multiples of Re.1/- thereof	Application amount Up to Rs.200,000
Non Institutional Investors	Bid Value of Rs. 2,00,001 and in multiples of Re.1/- thereof	Application amount up to Rs.2500 Crs
Qualified Institutional Buyers	Bid Value of Rs. 2,00,001 and in multiples of Re.1/- thereof	Application amount up to Rs.2500 Crs

Table4. Application Categories

Third Tranche of CPSE ETF: It opened for subscription for retail investors and pension funds till March 17, 2017and it saw subscription worth Rs. 9,200 crore which was over 3.7 times against the size of Rs. 2,500 crore. The institutional portion was subscribed 7.6 times with subscription worth Rs. 5,700 crore. The retail portion was subscribed by two times with retail bid worth Rs. 3,500 crore against the offer of Rs. 1,750 crore.

2.4. Pricing and Return on the ETFs

Many reviews have inspected the impact of the presentation of ETFs on their underlying Indices. A major force for the exploration around there is papers by Subrahmanyam (1991) and Gorton and Pennacchi (1993). Both reviews make models to clarify the appeal of "basket securities" (which can be index-linked securities or index futures contracts).Due to diversification of composite securities (and thus have no firmspecificrisk), trading in composite securities causes low expected losses to insiders, instead of trading in individual securities which make up the composite.Hence, migration of liquidity traders to composite securities can be predicted, resulting in trading of individual securities majorly by the informed traders and henceto receive higher adverse-selection costs (in the form of wider bid-askspreads) andbe less liquid the

models additionally suggest a positive connection between the level of expansion of a composite security and its allure to liquidity traders.

As opposed to the expectations of the above models, it is contended that the presentation of a basket security, for example, an ETF opens up another road for arbitrage.This contention depends on the work of Fremault (1991), who demonstrates that stock index futures contracts enable arbitrageurs to set up positions that benefit from price disparities between the index futures and the constituent stocks.With the presentation of ETFs, arbitrageurs can now additionally lead arbitrage utilizing the ETFs. The arbitrage movement will expand the liquidity and the estimating effectiveness of the individual stocks.

Comparison of the activity of ETFs and traditional index mutual funds that track the same indexes by using tracking error and also ETF's slight underperformance relative to index funds which track the same indexes was found by Gastineau (2004).

ETF pricing efficiency – premium/discount is defined as the contrast in the log of the ETF price and the log of the ETF NAV by Engle and Sarkar (2006). It was also suggested that similar to bid-ask spread, the premium of discount is one time cost. Examination of domestic and international ETF was done and found that existence of significant pricing inefficiencies is quite rare.

Equity ETF studies also focus on the ETF tracking error, such as Elton et al. (2002), Gastineau (2004) and Engle and Sarkar (2006). Specifications of tracking error are different but mostly it refers to how well the ETF track its underlying asset return in terms of return. Efficiency of ETFs in terms of ability to track their underlying index return is documented in most of the studies.

A paper on the introduction to the operation of exchange traded funds was presented by James M. Poterba and John B. Shoven (NBER Working Paper No. 8781, February 2002). Comparison of the largest ETF, the SPDR trust that invests in the S&P500 on the basis of pre-tax return and post-tax return, with the largest equity index fund, the Vanguard Index 500 on the basis of its return was done. As a result, during the period of 1994 and 2000, the before- and after-tax returns on the SPDR trust and this mutual fund

were very similar was suggested. The after-tax and the pre-tax returns on the fund were slightly greater than those on the ETF. According to these findings, taxable investors are offered by ETFs of holding broad baskets of stocks; deliver returns comparable to those of low-cost index funds.

Among scientists, Grinblatt and Titman (1992) demonstrated that the mutual funds' performance holds on at a long-run level. On the other hand, Bollen and Busse (2004) found evidence which proved that performance of mutual funds has short term persistence. The conclusions of other studies for example, Brown and Goetzmann (1995) and Elton et al. (1996) also supported mutual funds' performance persistence. With regards to ETFs, Kuo and Mateus (2007) explore the performance persistence of 20 iShares MSCI nation particular ETFs in correlation with the Standard and Poor (S&P) 500 Index discovering that market can be beaten by ETFs and that there is proof of yearly returns on the performance persistence.

As compared to index mutual funds, the tracking error is more for ETFs, which was shown in a study conducted by S. Narend (March, 2014). The analysis of the active returns; returns of the funds minus the returns of underlying index) shows that underlying index are always outperformed by the ETFs whereas, the index funds underperforms as well as outperforms. It is also revealed in the study that Jensen's alpha is negative for both types of funds, which implies that in the market both ETFs as well as index funds failed to provide excess returns; but, the Jensen's alpha shows better results for index funds as compared tp ETFs. Overall, the study shows, in India, in terms of a lower tracking error and a higher Jensen's alpha index funds has outperformed ETFs whereas, performance of ETFs are better in terms of active returns.

2.5. Volatility

A negligible change in the intraday patterns and levels of S&P 500 index volatility which is in association with the over time growth in leverage ETF market was shown in a study which was conducted by Trainor (2010) . Besides, no change was detected in the propensity of price momentum for the last 30min before and after the trading of the leveraged ETFs introduced in the market. At the end it was concluded that there is no substantial effect of the leveraged ETFs on the S&P 500 index.

It has been found that there has been statistically significant affect on the end of the day volatility of their sample 346 US blue chip stocks which is due to the end-of-day rebalancing of leveraged and also the inverse equity tracking ETFs, which was done by using intraday data from 2006 to 2011 by Haryanto et al (2012). But, its effect is economically significant for the trading days that has large price swings (3% or more).

Trainor, (2010); Charupat and Miu,(2012); Haryanto et al.,(2012) studied the end-of-day rebalancing of exposures of leveraged and inverse ETFs impact on the volatilities and prices of the underlying securities of the benchmark indices. The destinations of conveying day by day returns at consistent (positive or negative) products of the underlying benchmarks, leveraged and inverse ETFs need to rebalance the exposures once a day normally near the finish of the trading day. At the point when there is sure (negative) return on an index in a specific day, the issuers or their swap counterparties of both the bull and bear funds following that index should increment (decrease) their exposures on the index by purchasing (offering) the underlying securities. The bigger the extent of the everyday returns of the index and the bigger the measure of AUM, the more will be the rebalancing. Given that the trades identified with this rebalance demand focuses close to the finish of the trading day, they may influence the price volatility and even the prices of the underlying securities. The impact is relied upon to be more critical for those indices where the accumulated AUM of their following leveraged ETFs is significant in respect to the profundity of the markets of the underlying securities.

In a study by Visaltanachoti and Yang (2010), speed of convergence to market efficiency for NYSE-listed foreign stocks was analyzed. In the same report it was concluded that various firm-level features, like stock price, volatility, and trading volume, are related to the time needed to achieve market efficiency, significantly and negatively. The effects of trading costs are captured through price and trading volume (Stoll, 2003). Daily price, daily dollar trading volume, and daily volatility of intraday returns are included as control variables.

A study done by Itzhak Ben-David Fisher (College of Business, The Ohio State University, and NBER) Francesco Franzoni (University of Lugano (USI) and the Swiss

Finance Institute) and Rabih Moussawi (Villanova School of Business, Villanova University and WRDS, The Wharton School, University of Pennsylvania) in their paper on Do ETFs increase volatility shows that in their basket securities' non-fundamental volatility is increased by the ETFs. In index membership exogenous changes are exploited, and the stocks are found that have higher ETF ownership and yield higher volatility. Departures of stock prices at the intraday and daily frequencies relates with the ETF ownership. In contrast with the existing reshuffling noise across securities, ETFs add new noises to the market as suggested by time series evidence.

A great deal of scrutiny has been faced by leveraged ETFs, which are the segment of growing market. A role was played by them in increasing market volatility, as suggested by many researchers. It is examined to explain the increase in volatility at because of its popularity during the financial market crisis. This idea was rejected by two main points: 1) Despite of the continuous growth in the levered ETFs, high market volatility has been found to decrease and 2) financial crisis accompanying volatility, irrespective existence of levered ETFs based on the economic recession, the financial firms holding tremendous leverage, and the large drop in stock prices, should have been expected.

No evidence on the reason of volatility's impact on the leverage ETFs rebalancing issues has been found in the study conducted by William J. Trainor Jr. (East Tennessee State University, Johnson City, USA) in the paper "Do Leveraged ETFs Increase Volatility" (July 3, 2010). Intra-daily volatility in time periods not associated with rebalancing saw the same spikes in volatility as the last 30 minutes did. Furthermore, price momentum and reversal during the height of the financial crisis also does not appear to be related to leverage ETF rebalancing.

Chapter - 3

3.Research Methodology

In this research, various methodologies have been used for the analysis. Firstly, all the data was collected from the website of NSE India, which were later used for various calculations and graphical representation in order to show the findings of the research. The various calculations that were done as part of this research are return calculation, correlation of CPSE ETF and NIFTY CPSE and the annual volatility of CPSE. All the findings were later represented graphically in order to give a clear view of the findings and analysis. All the work has been done on the MS-Excel in order to maintain precision and increase accuracy in the research.

3.1. Return

Without taking position in a single stock on an individual basis, ETFs exposes investors to many individual stocks. Since, they are traded throughout the trading day, it is necessary to calculate return on the fund portfolio on a timely basis. In this research, return on both CPSE ETF and NIFTY ETF is calculated and compared, as ETFs always outperform its underlying index. So, in order to show its validity, return of the ETF and its underlying index has been calculated and then represented graphically using MS-Excel. It shows that the investment on ETFs is a profitable venture as compared to the investment on the index.

In a particular period, the profit or loss on a security is known as return. It consists of the income and the capital gains relative on an investment, and it is usually quoted as a percentage.

Capital asset pricing model formula can be used to calculate the total return on an ETF:

*Total ETF return = (risk-free rate of return) + (ETF beta * (market return - risk-free rate of return)) + excess return*

The more the risk, the more is the opportunity for the greater profits or losses.

Two portfolios or ETFs can compared using the CAPM model that have equal or highly similar risk profiles (beta) to see which produces the most excess returns.

In case of index, which is an equity index and tracks capital gains of a group of stocks overtime, assumes that any kind of cash distributions are again invested in the index.

Total indices return = (closing price – opening price)/opening price

Another way to find the return for the concerned period can be done by using the following formula:

$$R = (P1-P0+Dp) / P0$$

where, R = Return

P0 = Price at the beginning of the period

P1 = Price at the end of the period

Dp = Dividend yield in cash during the period

It can be used to determine the return on any kind of asset, bonds, stocks, funds, indices etc.

In this research, returns are calculated using BSE ETF return calculator. A minimum of Rs. 5000 has been assumed as an investment and accordingly returns has been calculated on an annual basis.

BSE ETF return calculator is the online calculator that is used to calculate the return on the ETF of any fund house for any specific period of time. It is the website of Bombay Stock Exchange and hence, a credible website for the accurate calculation of the return. There are many other websites for ETF return calculator, but BSE ETF return calculator is one of the most trusted and credible website for such calculations.

Later, in the findings it has been shown that the return of CPSE ETF is always greater than the return on its underlying index, NIFTY CPSE.

Both the return curve gives a graphical representation of the analysis for the course of four years.

3.2.Variance and Correlation

Statistically measuring the deviation in a set of observations is known as variance. It can also be used to find the degree of deviation of an actual expense from the budgeted or forecast amount, in accounting and financial analysis.

In this study, variance of CPSE ETF and NIFTY CPSE has been calculated in order to check the degree of variation between the two. It has already been known that the variation between two is quite less because NIFTY CPSE is the underlying index of CPSE ETF.

$$Portfolio\ Variance = w^2_A * \sigma^2(R_A) + w^2_B * \sigma^2(R_B) + 2*(w_A)*(w_B)*Cov(R_A, R_B)$$

where, w_A *and* w_B *are portfolio weights*

$\sigma^2(R_A)$ *and* $\sigma^2(R_B)$ *are variances*

$Cov(R_A, R_B)$ *is the covariance*

In MS-Excel the syntax used for calculating variance is:

Syntax

VAR(number1,number2,...)

Variance helps to identify the fluctuations between two different sets of data which supports in analyzing how closely two portfolios are related to each other.

ETFs and their underlying index are positively correlated, which means the direction of movement of both of them is same. The performance of ETFs majorly depends on how well its underlying index is performing. Both of them are directly proportional to each other.

It is a statistical technique that basically shows whether and how two different series are related to each other. In finance and investment industry, it is used to measure the degree of relativity between two different securities. It is highly used to manage the portfolio of an investor.

In our study, we have found out the correlation between CPSE ETF and NIFTY CPSE and analyzed whether they actually move in the same direction as usually known.

There are various ways to find correlation. But the most common technique used to determine correlation is Pearson's correlation coefficient formula.

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

There are two more ways to calculate correlation. They are as follows:

Sample correlation coefficient

$$r_{xy} = \frac{s_{xy}}{s_x s_y}$$

where, S_x and s_y are the sample standard deviations

s_{xy} is the sample covariance.

Population correlation coefficient

$$\rho_{xy} = \frac{\sigma_{xy}}{\sigma_x \sigma_y}$$

The population correlation coefficient uses σ_x and σ_y as the population standard deviations, and σ_{xy} as the population covariance.

These are the various mathematical formulas to calculate the correlation of two time series or two different portfolios, which is later used to analyze the relation between the both.

Another way to calculate correlation is to apply algorithm in MS-Excel. The benefit of using MS-Excel to calculate correlation is that, since a large number of data is used to determine correlation, it increases accuracy in the findings and the result determined are more genuine.

The formula used to determine the correlation is:

Syntax

CORREL(array1,array2)

Array1 is a cell range of values.

Array2 is a second cell range of values.

This can be used to determine correlation of two different series by inserting their values in different arrays and then using in this syntax to determine the relation.

In this research this syntax is used to develop results of CPSE ETF and NIFTY CPSE. Later, these results were used to analyze the correlation between the two. It has been done to maintain precision and for high accuracy.

The main result of a correlation is called the correlation coefficient (or "r"). It ranges from -1.0 to +1.0. The closer r is to +1 or -1, the more closely the two variables are related. If r is close to 0, it means there is no relationship between the variables. If one variable is directly proportional to other, then it implies that r is positive. If both variables are inversely proportional, then r will be negative (often called an "inverse" correlation).

In order to find the strength in the relationship between the data, correlation coefficient formula can be used. The formulas return a value between -1 and +1, where:

I. +1 indicates a strong positive relationship.
II. -1 indicates a strong negative relationship.
III. A result of zero indicates no relationship at all.

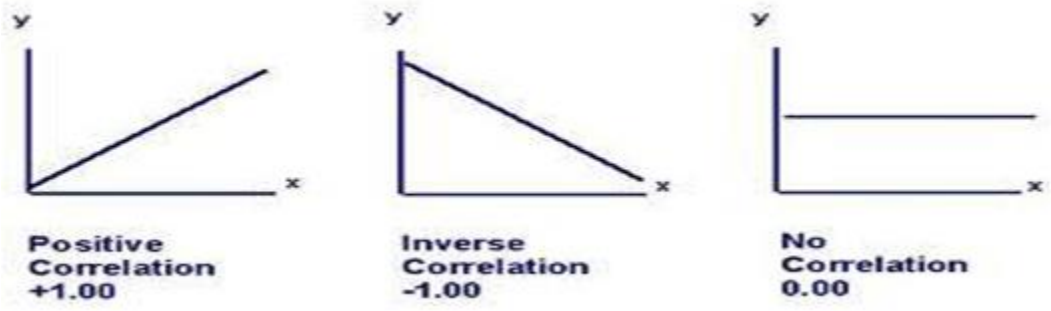

Figure 4: Correlation Coefficient Variation

3.3. Volatility

A statistical measure that is used to measure the fluctuation rate in the price of a security for a given set of return is known as volatility. Usually, the risk associated with the security is measured. It is used to gauge the fluctuations in the return of the portfolio

from its price. The pricing behavior for a security can be shown using this and also for smaller duration it helps in estimating the fluctuations.

There are two main measures of volatility: historical volatility and implied volatility. Historical volatility is the measure of a stock's price movement in view of historical price. It measure how dynamic a stock price commonly is over a specific timeframe. Usually,

Change in everyday rate value in a stock is used to measure historical volatility and the average over a given day and age is computed. This average is then communicated as an annualized rate. Chronicled volatility is frequently alluded to as genuine instability or acknowledged instability.

Here and now or more dynamic brokers tend to utilize shorter eras of measuring verifiable volatility, the most widely recognized being five-day, ten-day, 20-dayand 30-day. Intermediate-term or long haul speculators tend to utilize longer eras, most ordinarily 60-day, 180-day and 360-day.

Exactly, it has been found that securities exchange return demonstrates time shifting volatility with clustering impact. They likewise have asymmetric nature and have long memory i.e., the autocorrelation of instability up-to long time skyline is critical. Instability bunching in returns suggests that little (vast) value changes take after little (extensive) value changes of either signs. Asymmetric nature of unpredictability shows that profits and restrictive instability are adversely related. A vast piece of this exploration around there spotlights on the connection between stock unpredictability and stock returns. Like securities exchange return, item advertises return likewise indicates time changing instability with bunching and lopsided impact. They additionally display long memory. Exact approval of adequacy of value conducts and hazard administration of these business sectors is dependent upon the presumption of unpredictability of the profits.

Volatility is defined as annualized standard deviation. The annualized volatility is the standard deviation of the instrument’s yearly logarithmic returns. A simple method to calculate volatility is as follows:

1. Determine each period’s deviation (close less average price).
2. Calculate the average (mean) price for the number of periods or observations.

3. Square each period's deviations.
4. Sum the squared deviations.
5. Divide this sum by the number of observations.
6. The standard deviation is then equal to the square root of that number.

*Std = sqrt [{1/n} * sum[{r(t) – avr}^2]]*

where, std = standard deviation, n = number of returns, r(t) = portfolio returns, avr = average portfolio return [sum {r(t)/n]

The generalized volatility for time't' is expressed as: $\sigma_t = \sigma\sqrt{t}$

Volatility can also be calculated on MS-Excel for better precision in calculation. The syntax that is used on excel for the calculation of volatility is as follows:

*stdev(number1,number2,...) * sqrt (t)*

For calculating the price volatility of ETF, standard deviation of the logarithmic price change for the given time period is calculated.

In this paper, volatility of the closing price of the CPSE ETF has been calculated over the course of four years. It has been shown that how price has increased or decreased over this course and the degree of the volatility of this fund.

3.4. Data Collection and Techniques

1. Collection of data from website of NSE India.
2. Using BSE return calculator to calculate the returns of CPSE ETF and NIFTY CPSE and comparing using graphical representation.
3. Applying correlation algorithm on CPSE ETF and NIFTY CPSE in MS-Excel sheet.
4. Estimating volatility of CPSE ETF for the past four years.

Chapter - 4

4. Data Analysis

4.1. Variance and Correlation

Variance and correlation of CPSE ETF and NIFTY CPSE has been calculated using their return on an annual basis. This calculation has been done to show that how the CPSE ETF is related to its underlying asset NIFTY CPSE.

Annual return data of CPSE ETF and NIFTY CPSE has been collected from the website of BSE which is further used to calculate the correlation and variance between the two. The results are later represented graphically to show how the CPSE ETF and its underlying index, NIFTY CPSE are related to each other.

YEAR	Return on CPSE ETF	NIFTY CPSE Return
2014-15	20.79%	15.86%
2015-16	-16.80%	-20.01%
2016-17	42.04%	36.47%

Table 5. Return on CPSE ETF and NIFTY CPSE

Basic formula to calculate correlation between two samples:

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

Variance	0.068814118
Correlation	0.999991034

Table 6. Variance and Correlation of CPSE ETF and NIFTY CPSE (2014-2017)

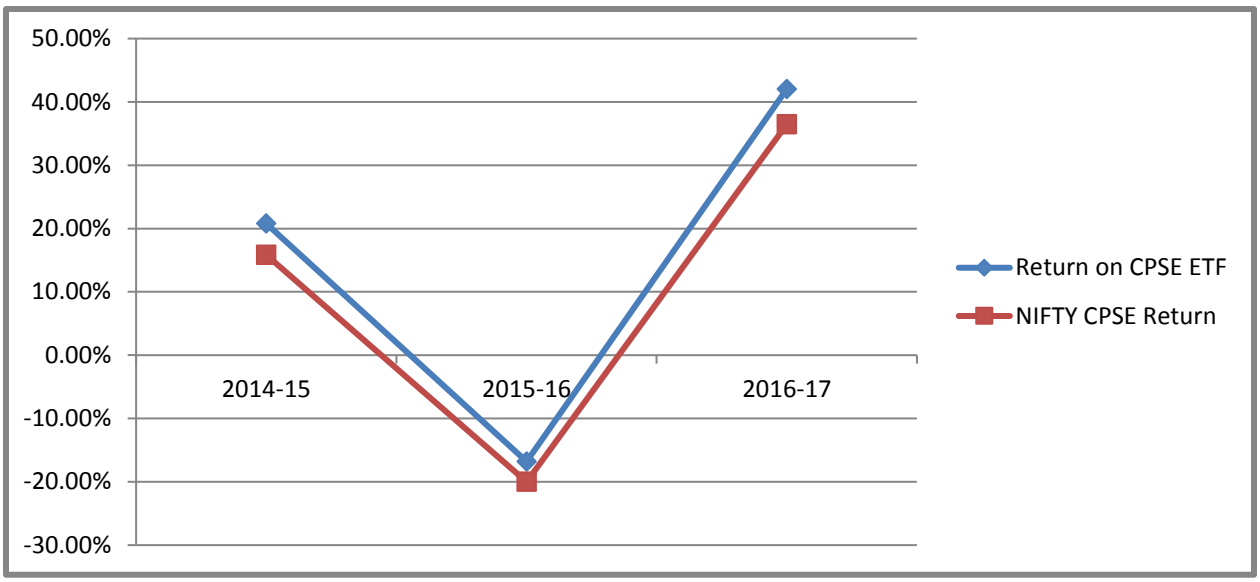

Figure 5. Graph of CPSE ETF and NIFTY CPSE on the basis of return (2014-2017)

MONTH	Return on CPSE ETF	NIFTY CPSE Return
28 jan 2017 - 28 feb 2017	1.24%	-0.34%
28 feb 2017 - 28 mar 2017	-1.08%	-2.54%
28 march 2017 - 28 april 2017	8.24%	8.02%

Table 7. Return on CPSE ETF and NIFTY CPSE on monthly basis (2017)

Variance	0.002218679
Correlation	0.99908943

Table 8. Variance and Correlation

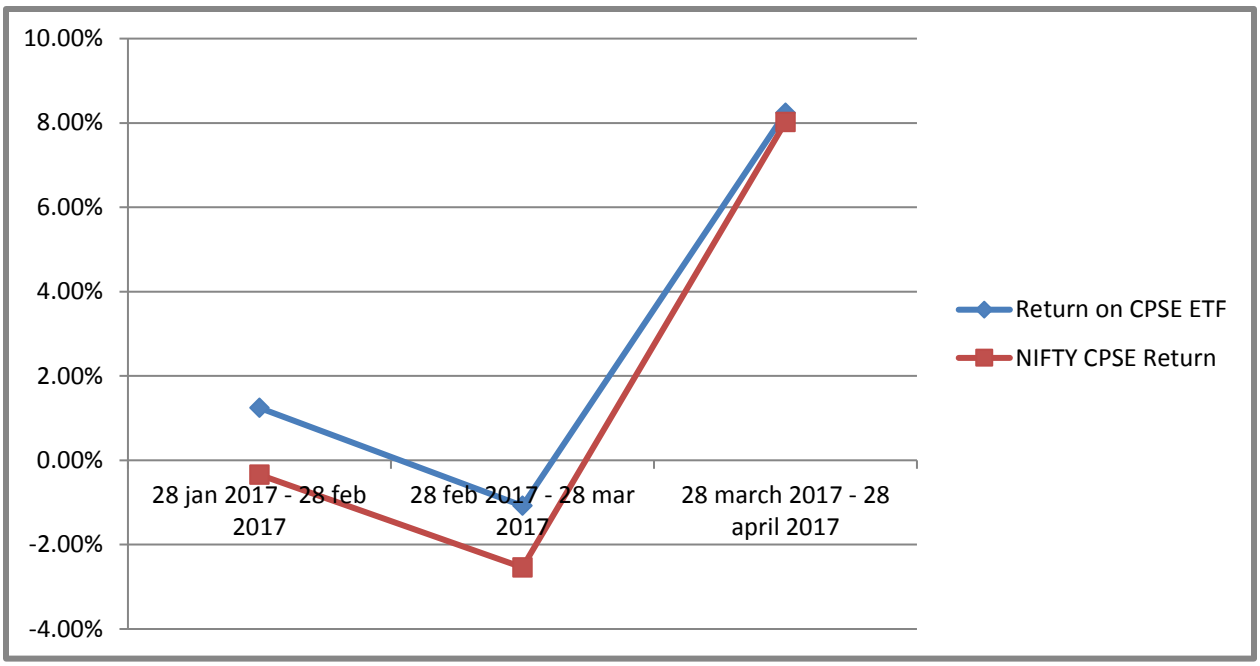

Figure 7. Graph of CPSE ETF and NIFTY CPSE on the basis of return

The yearly as well as the monthly calculation of the correlation are 0.999991034 and 0.99908943 respectively. The correlation between CPSE ETF and NIFTY CPSE is positive and very close to 1, which shows that it is a positive correlation that also indicates that the CPSE ETF and its underlying index, NIFTY CPSE are directly proportional. The movement of both of them is always in the same direction. Whenever, NIFTY CPSE goes up, CPSE ETF goes up and similarly both of them plunge together.

However, the graph also indicates that the return yield by the CPSE ETF is always greater than the return yield by the NIFTY CPSE. The return by both of them might be closer but CPSE ETF always outperforms the NIFTY CPSE.

4.2. Volatility and Beta Estimation

Four years data of the price of the CPSE ETF has been collected from the website of NSE. This data has been used to calculate the logarithmic price change, which is plotted on a line graph. The logarithmic price change is used to calculate the standard deviation of the CPSE ETF which in turn is used to find the volatility in price change of

the CPSE ETF over the course of time. CPSE ETF was introduced in 2014 and hence the data of these four years are used for the analysis.

Annual volatility of the CPSE ETF has been calculated for each year which is then plotted on a 3-D line graph.

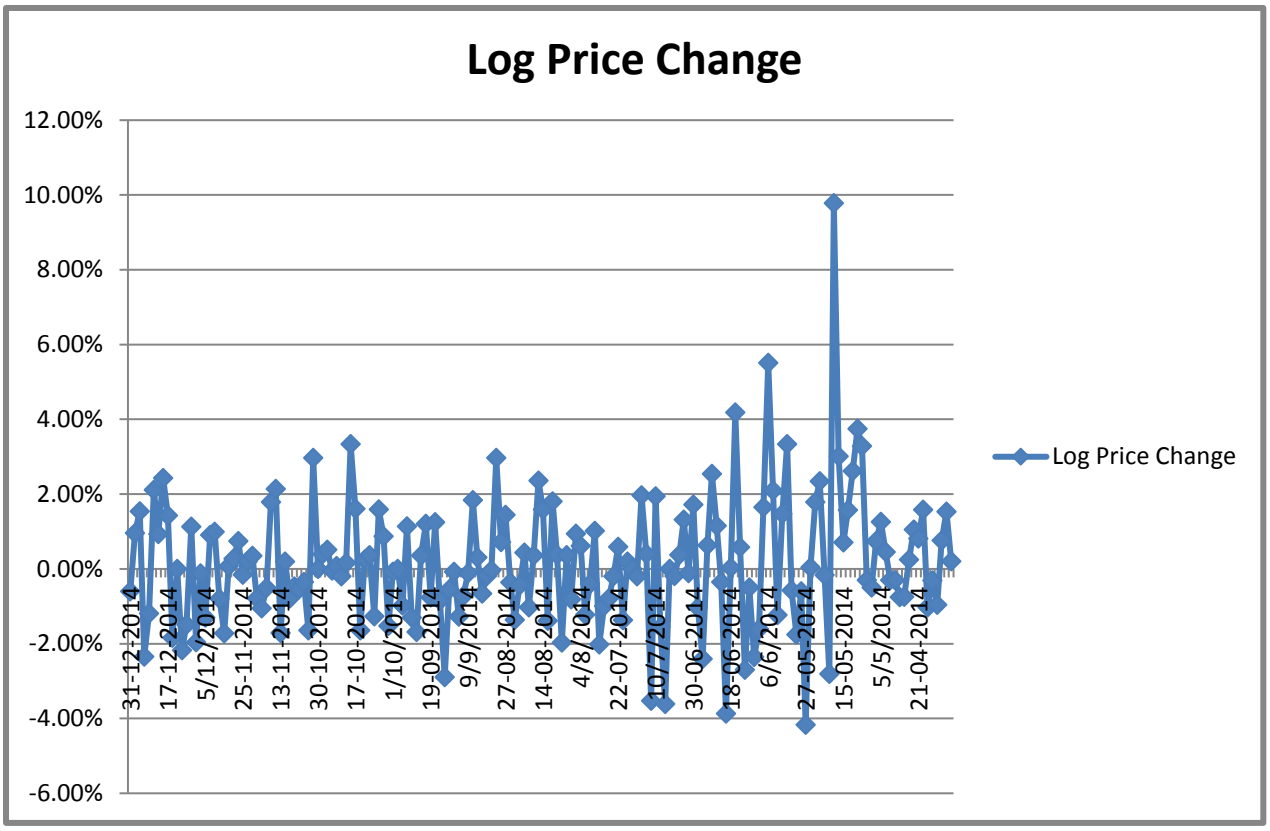

Figure 8. Log Price Change (2014)

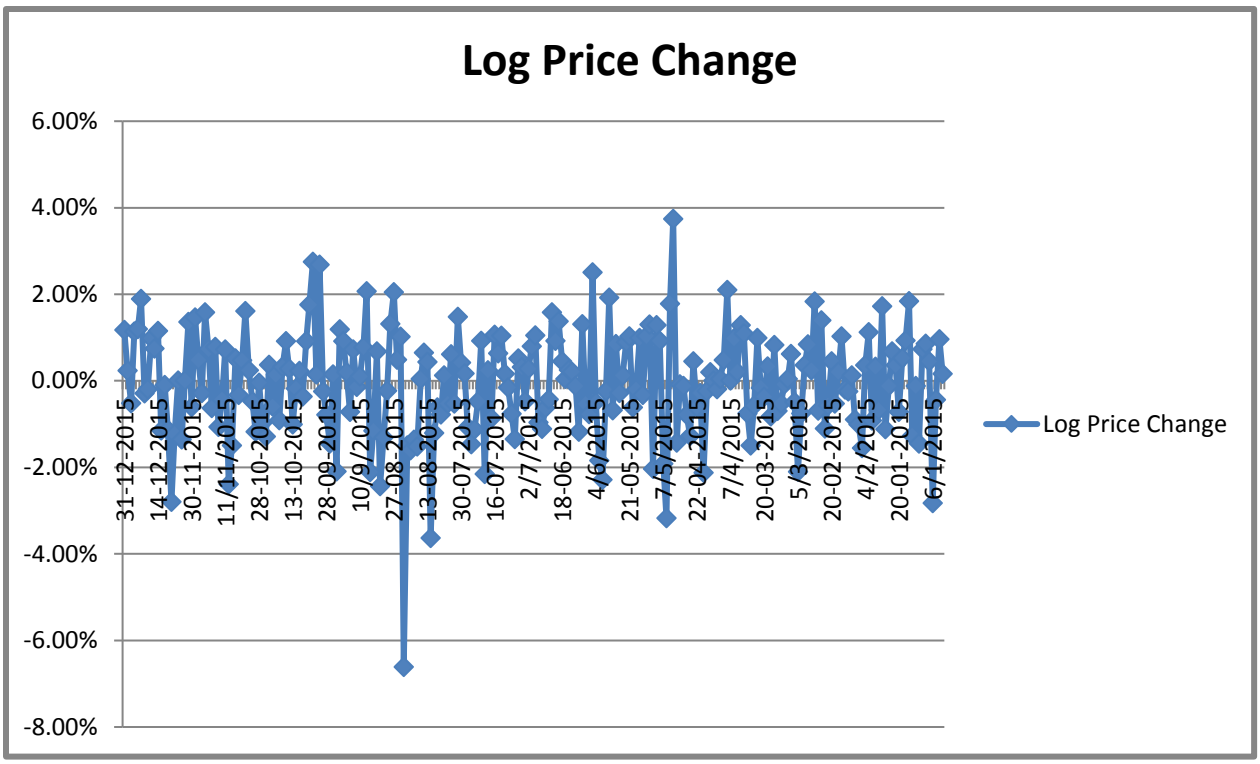

Figure 9. Log Price Change (2015)

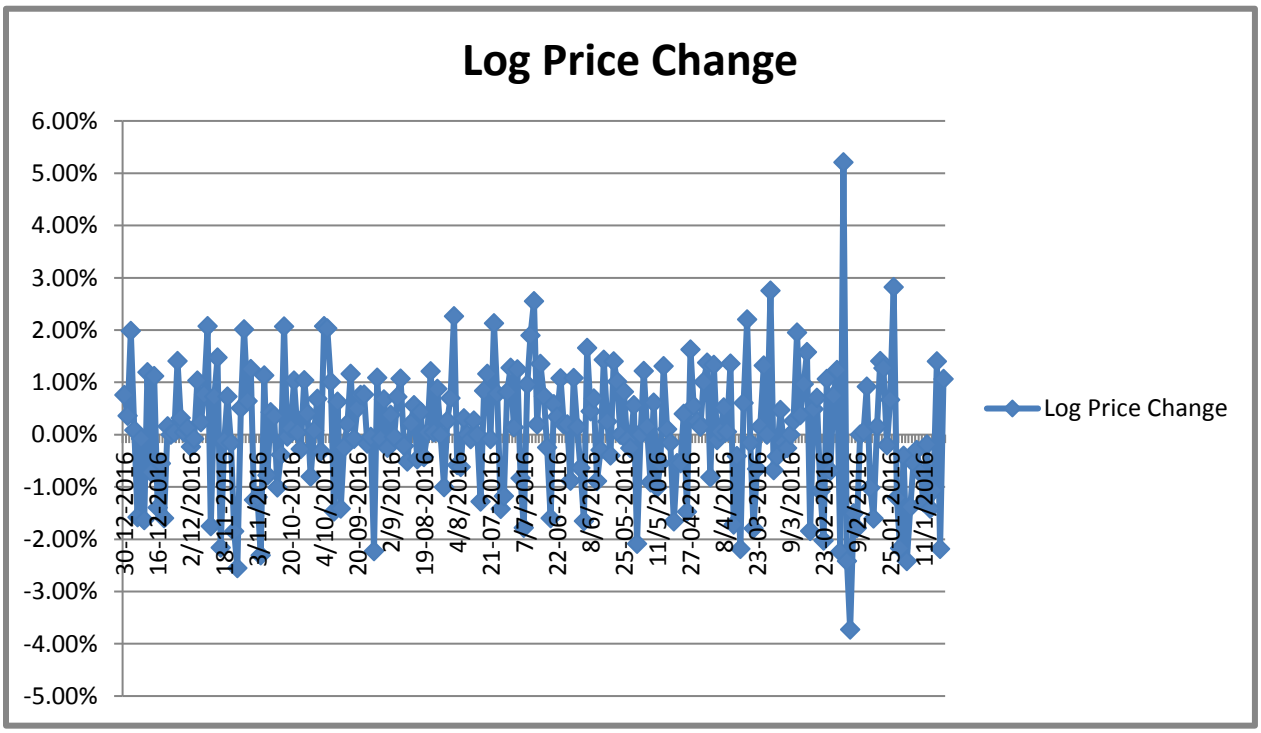

Figure 10. Log Price Change (2016)

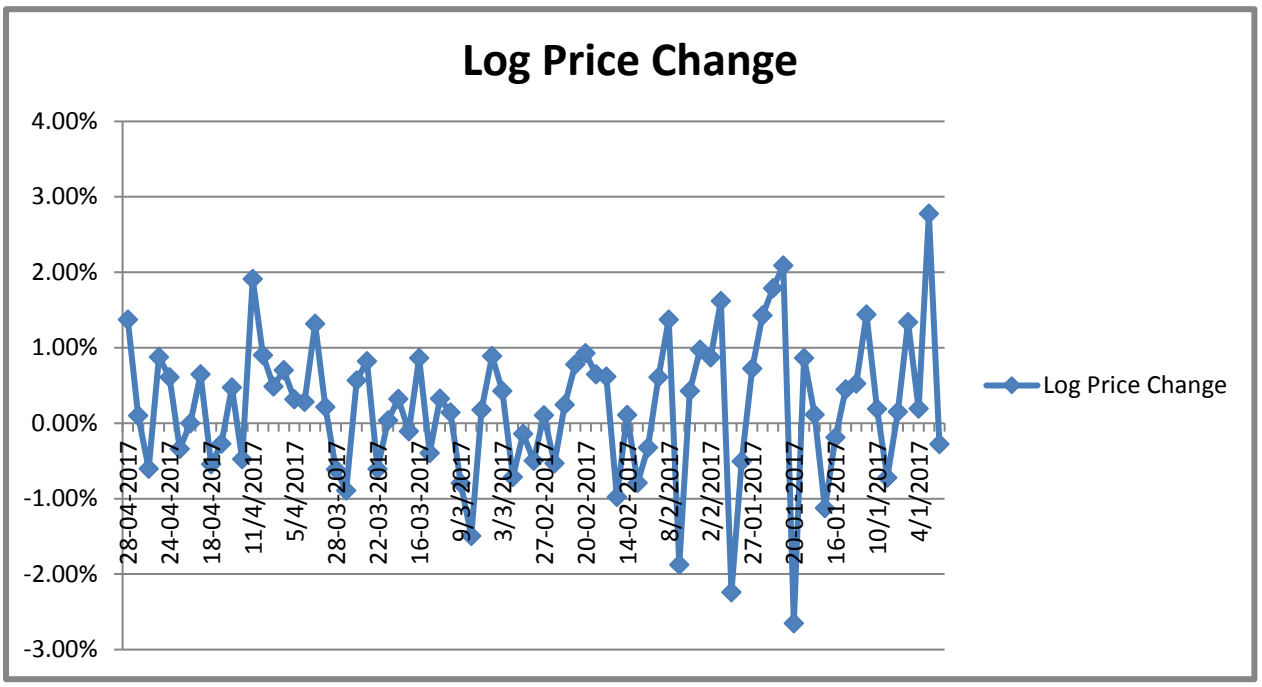

Figure 11. Log Price Change (2017)

Following are the log price change of CPSE ETF for four years. This data is used to calculate the volatility of the price change of the CPSE ETF using its standard deviation.

For time 't', the generalized volatility is:

$$\sigma_t = \sigma\sqrt{t}$$

where, σ =standard deviation

YEAR	Annual Volatility
2014	22.74%
2015	18.71%
2016	18.44%
2017	8.42%

Table 9. Annual Volatility for 4 years

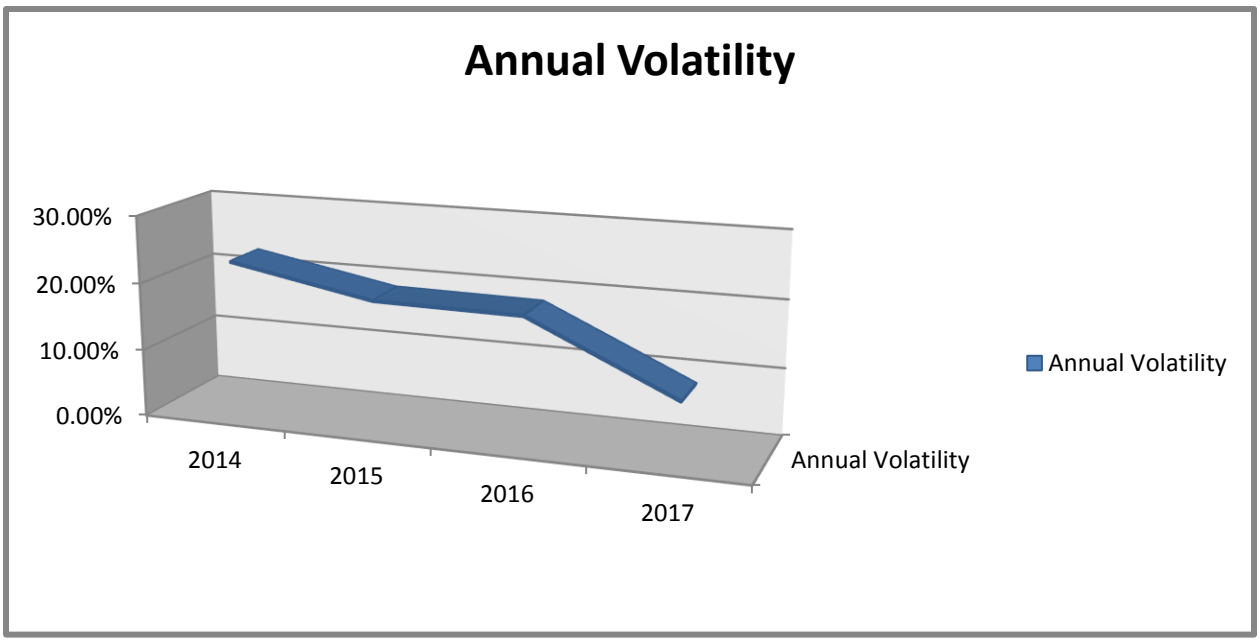

Figure 12. Graphical Representation of Annual Volatility of CPSE ETF for 4 years

The graphical representation of log price change and annual volatility of CPSE ETF shows that it is a very volatile instrument and since it is traded throughout the trading day, so the price fluctuation is quite high.

Also, from figure 12 it can be interpreted that the volatility of CPSE ETF is plunging with each passing year.

Also, beta has been calculated to determine the volatility of the CPSE ETF as compared to the market. Beta shows how much riskier the financial product is. It measures volatility and riskiness of a portfolio as compared to the market.

If, beta is

=1, then the price of the security moves with the market

<1, then the security is less volatile than the market

>1, then the security is more volatile than the market.

Beta = covariance / variance

In the case of CPSE ETF,

Covariance (2014-17)	0.056773322
Covariance (2017)	0.00180048

Variance (2014-2017)	0.068814118
Variance (2017)	0.002218679

Hence,

Beta (2014-17)	0.825024343
Beta (2017)	0.811510034

It shows that, during the period of 2014-17, CPSE ETF was 17.5% less volatile than the market and in the year 2017, till now it was 18.84% less volatile than the market. Since, the beta is positive, it means CPSE ETF is moving in the same direction as of the market.

Chapter - 5

5. Findings and Recommendations

As earlier discussed, this research is done to analyze the relation between the CPSE ETF and its underlying index, NIFTY CPSE and also to determine the volatility in the price change of the CPSE ETF and the risk associated with the CPSE ETF as compared to the market.

The following are findings that have been found through this research and the basic recommendations on the basis of these findings.

a. **Finding:** CPSE ETF and NIFTY CPSE are highly positively correlated with each other which mean that movement of both of them is always in the same direction. But, in spite of them being positively correlated, the return on CPSE ETF always outperforms the return on NIFTY CPSE. **Recommendation:** When an investor wants to invest either on ETF or the index, it should be on the ETF to garner more return. The portfolio of both of them contains holdings of different companies in different sectors and if an investor is interested in investing on such portfolio, it should be on the ETF for higher returns. Both CPSE ETF and NIFTY CPSE move in the same direction but the yielding capacity of CPSE ETF is more than that of the NIFTY CPSE.

b. **Finding:** The price fluctuation over the span of four years is quite high and also the volatility graph shows that it is plunging rapidly. The volatility graph shows that the volatility is declining. **Recommendation:** The plunging volatility shows the declining in the volatility which shows that the stock price of the CPSE ETF is increasing which shows that the CPSE ETF is performing well in the market.

c. **Finding:** The beta value which is less than 1 show that it is less volatile than the market. Also, the positive beta indicates that it movement is in the same direction with the market. **Recommendation:** Since, it is less volatile than the market, so it is less risky than the market.

Hence, CPSE ETF is more attractive option than the NIFTY CPSE for investments.

Chapter - 6

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Chapter - 7

7. Annexure

Excel workbook showing calculation of volatility.

DATE	OPEN	HIGH	LOW	CLOSE	Log Price Change	%age Log
31-12-2014	25.15	25.45	24.92	24.95	-0.005994024	-0.60%
29-12-2014	24.98	25.19	24.85	25.1	0.00960776	0.96%
26-12-2014	24.65	24.88	24.6	24.86	0.015403628	1.54%
24-12-2014	24.85	24.86	24.11	24.48	-0.023416492	-2.34%
23-12-2014	24.7	25.35	24.7	25.06	-0.01190018	-1.19%
22-12-2014	24.5	25.5	24.5	25.36	0.02112053	2.11%
19-12-2014	24.61	24.99	24.61	24.83	0.009306157	0.93%
18-12-2014	24.24	24.69	24.24	24.6	0.024276033	2.43%
17-12-2014	23.45	24.15	23.05	24.01	0.014261987	1.43%
16-12-2014	24	24	23.6	23.67	-0.018418269	-1.84%
15-12-2014	24	24.17	23.93	24.11	0	0.00%
12/12/2014	24.53	24.55	24.05	24.11	-0.021744446	-2.17%
11/12/2014	24.77	24.86	24.54	24.64	-0.014904606	-1.49%
10/12/2014	24.83	25.37	24.66	25.01	0.011258663	1.13%
9/12/2014	25.15	25.24	24.72	24.73	-0.019620249	-1.96%
8/12/2014	25.31	25.39	25.15	25.22	-0.001188825	-0.12%
5/12/2014	25.71	25.71	25.1	25.25	-0.01298464	-1.30%
4/12/2014	25.41	25.58	25.33	25.58	0.009032066	0.90%
3/12/2014	25.13	25.88	25.13	25.35	0.009910884	0.99%
2/12/2014	25.34	25.34	25.09	25.1	-0.00793655	-0.79%
1/12/2014	25.2	25.6	25.2	25.3	-0.017241806	-1.72%
28-11-2014	25.86	25.91	25.69	25.74	0.000777303	0.08%
27-11-2014	25.65	25.8	25.61	25.72	0.002725328	0.27%
26-11-2014	25.45	25.8	25.45	25.65	0.007434978	0.74%
25-11-2014	25.3	25.62	25.1	25.46	-0.001569859	-0.16%
24-11-2014	25.56	25.56	25.4	25.5	0.001962709	0.20%
21-11-2014	25.4	25.9	25.3	25.45	0.003542613	0.35%
20-11-2014	25.52	25.75	25.11	25.36	-0.0078555	-0.79%
19-11-2014	25.83	25.94	25.3	25.56	-0.010507978	-1.05%
18-11-2014	26	26.1	25.8	25.83	-0.005020285	-0.50%
17-11-2014	25.33	26.15	25.33	25.96	0.01787844	1.79%
14-11-2014	25.15	25.6	25.05	25.5	0.021403909	2.14%
13-11-2014	25.29	25.5	24.95	24.96	-0.017080852	-1.71%
12/11/2014	25.46	25.57	25.36	25.39	0.001971221	0.20%
11/11/2014	25.55	25.69	25.31	25.34	-0.007861676	-0.79%
10/11/2014	25.6	26	25.26	25.54	-0.004687509	-0.47%

7/11/2014	25.52	25.88	25.5	25.66	-0.005441133	-0.54%
5/11/2014	25.85	26.18	25.7	25.8	-0.003482302	-0.35%
3/11/2014	26.9	26.9	25.7	25.89	-0.016472313	-1.65%
31-10-2014	25.74	26.53	25.74	26.32	0.02969179	2.97%
30-10-2014	25.5	25.73	25.3	25.55	0	0.00%
29-10-2014	25.6	25.68	25.43	25.55	0.003921574	0.39%
28-10-2014	25.31	25.56	25.3	25.45	0.005121146	0.51%
27-10-2014	25.41	25.55	25.28	25.32	-0.000394867	-0.04%
23-10-2014	25.6	25.75	25.2	25.33	0.000789889	0.08%
22-10-2014	25.45	25.45	25.2	25.31	-0.001973555	-0.20%
21-10-2014	25.27	25.57	25.27	25.36	0.001578532	0.16%
20-10-2014	24.75	25.4	24.75	25.32	0.033329726	3.33%
17-10-2014	24.31	24.55	24.11	24.49	0.01605303	1.61%
16-10-2014	24.5	24.68	23.6	24.1	-0.016461277	-1.65%
14-10-2014	24.46	24.7	24.4	24.5	0.002451983	0.25%
13-10-2014	24.27	24.47	24.1	24.44	0.003689285	0.37%
10/10/2014	24.35	24.55	24.25	24.35	-0.012650648	-1.27%
9/10/2014	24.4	24.74	24.4	24.66	0.015941478	1.59%
8/10/2014	24.04	24.35	24	24.27	0.008690309	0.87%
7/10/2014	24.39	24.51	24.03	24.06	-0.015261175	-1.53%
1/10/2014	24.67	24.9	24.4	24.43	-0.000818331	-0.08%
30-09-2014	24.25	24.75	24.25	24.45	0	0.00%
29-09-2014	24.5	24.67	24.26	24.45	-0.009768087	-0.98%
26-09-2014	24.25	24.75	24.19	24.69	0.011405419	1.14%
25-09-2014	24.61	24.65	24.26	24.41	-0.013024197	-1.30%
24-09-2014	26.1	26.1	24.24	24.73	-0.016840815	-1.68%
23-09-2014	25.15	25.6	24.45	25.15	0.003584947	0.36%
22-09-2014	24.92	25.12	24.83	25.06	0.012043502	1.20%
19-09-2014	25.1	25.19	24.56	24.76	-0.007644374	-0.76%
18-09-2014	24.6	25.01	24.6	24.95	0.012502684	1.25%
17-09-2014	24.9	24.9	24.41	24.64	-0.008486614	-0.85%
16-09-2014	25.53	25.57	24.71	24.85	-0.028953044	-2.90%
15-09-2014	25.7	26.5	25.45	25.58	-0.005458103	-0.55%
12/9/2014	25.93	26	25.7	25.72	-0.000777303	-0.08%
11/9/2014	26	26	25.69	25.74	-0.012739026	-1.27%
10/9/2014	26.21	26.25	25.91	26.07	-0.007261641	-0.73%
9/9/2014	26.4	26.4	25.65	26.26	-0.00114177	-0.11%
8/9/2014	26.03	26.33	25.6	26.29	0.018426625	1.84%
5/9/2014	25.85	26.02	25.62	25.81	0.003104387	0.31%
4/9/2014	25.75	25.9	25.54	25.73	-0.006585342	-0.66%
3/9/2014	26.06	26.19	25.68	25.9	-0.001928641	-0.19%

2/9/2014	26	26	25.45	25.95	-0.000385282	-0.04%
1/9/2014	25.2	26.09	25.2	25.96	0.029712897	2.97%
28-08-2014	25.1	25.47	25.1	25.2	0.007168489	0.72%
27-08-2014	24.88	25.1	24.79	25.02	0.014493007	1.45%
26-08-2014	24.5	24.85	24.26	24.66	-0.003642991	-0.36%
25-08-2014	25.29	25.29	24.53	24.75	-0.013643871	-1.36%
22-08-2014	25	25.39	25	25.09	-0.004374634	-0.44%
21-08-2014	25.1	25.4	24.7	25.2	0.004374634	0.44%
20-08-2014	25.35	25.37	24.98	25.09	-0.01030937	-1.03%
19-08-2014	25.5	25.59	25.2	25.35	0.003556613	0.36%
18-08-2014	24.5	25.56	24.5	25.26	0.023634186	2.36%
14-08-2014	25	25	24	24.67	0.015934964	1.59%
13-08-2014	24.52	24.73	24.01	24.28	-0.013906155	-1.39%
12/8/2014	24.1	24.7	24.1	24.62	0.018033276	1.80%
11/8/2014	24.08	24.8	24	24.18	0.003729029	0.37%
8/8/2014	24.3	24.88	24	24.09	-0.01972937	-1.97%
7/8/2014	24.5	24.75	24.5	24.57	0.003669729	0.37%
6/8/2014	24.85	24.85	24.35	24.48	-0.008136741	-0.81%
5/8/2014	24.55	24.95	24.31	24.68	0.009362983	0.94%
4/8/2014	24.1	24.6	24	24.45	0.006153866	0.62%
1/8/2014	24.45	24.7	24.25	24.3	-0.012270093	-1.23%
31-07-2014	24.75	24.9	24.55	24.6	-0.004056801	-0.41%
30-07-2014	24.7	24.75	24.4	24.7	0.010173028	1.02%
28-07-2014	24.85	24.85	24.4	24.45	-0.020243606	-2.02%
25-07-2014	25.3	25.35	24.85	24.95	-0.009970172	-1.00%
24-07-2014	25.5	25.5	25.1	25.2	-0.00790518	-0.79%
23-07-2014	25.5	25.7	25.2	25.4	-0.001966569	-0.20%
22-07-2014	25.25	25.55	25.25	25.45	0.005911347	0.59%
21-07-2014	25.65	25.65	25.2	25.3	-0.013739176	-1.37%
18-07-2014	25.4	25.9	24.9	25.65	0.00195122	0.20%
17-07-2014	25.5	25.65	25.45	25.6	0	0.00%
16-07-2014	25.85	25.85	25.25	25.6	-0.00195122	-0.20%
15-07-2014	25.35	25.7	25.35	25.65	0.019685675	1.97%
14-07-2014	25	25.35	24.85	25.15	0.003984069	0.40%
11/7/2014	25.85	26	25	25.05	-0.035297782	-3.53%
10/7/2014	25.55	26.55	25.05	25.95	0.019455867	1.95%
9/7/2014	25.65	26.05	25.2	25.45	-0.015594858	-1.56%
8/7/2014	26.8	27	25.6	25.85	-0.036091287	-3.61%
7/7/2014	26.95	27	26.65	26.8	0	0.00%
4/7/2014	26.75	26.9	26.45	26.8	-0.001863933	-0.19%
3/7/2014	27	27	26.7	26.85	0.003731348	0.37%

2/7/2014	26.8	26.85	26.6	26.75	0.013170463	1.32%
1/7/2014	26.6	26.8	26.3	26.4	-0.001135718	-0.11%
30-06-2014	26.19	26.52	26.15	26.43	0.017172717	1.72%
27-06-2014	26.5	26.5	25.92	25.98	-0.010338978	-1.03%
26-06-2014	26.39	26.78	26.12	26.25	-0.024088481	-2.41%
25-06-2014	26.95	27.09	26.78	26.89	0.006342122	0.63%
24-06-2014	26.35	26.89	26.2	26.72	0.02539458	2.54%
23-06-2014	26	26.17	25.77	26.05	0.011583141	1.16%
20-06-2014	26	26.12	25.7	25.75	-0.003489052	-0.35%
19-06-2014	26.45	26.7	25.7	25.84	-0.038714512	-3.87%
18-06-2014	26.85	27.19	26.16	26.86	0.00037237	0.04%
17-06-2014	25.9	27.3	25.84	26.85	0.041831194	4.18%
16-06-2014	25	26	25	25.75	0.005842276	0.58%
13-06-2014	26.5	26.5	25.05	25.6	-0.026976588	-2.70%
12/6/2014	26.5	26.79	26.1	26.3	-0.004930789	-0.49%
11/6/2014	27.1	27.5	26.17	26.43	-0.023556894	-2.36%
10/6/2014	27.5	27.61	26.66	27.06	-0.016129382	-1.61%
9/6/2014	27.5	27.95	26.98	27.5	0.016498999	1.65%
6/6/2014	25.75	27.7	25.75	27.05	0.055094654	5.51%
5/6/2014	25.28	25.71	25.02	25.6	0.020920439	2.09%
4/6/2014	25.4	25.48	25	25.07	-0.01228955	-1.23%
3/6/2014	25	25.48	24.92	25.38	0.014685717	1.47%
2/6/2014	24.21	25.5	24.2	25.01	0.03333642	3.33%
30-05-2014	24.31	24.86	24.07	24.19	-0.005770832	-0.58%
29-05-2014	24.89	24.89	24.2	24.33	-0.017519291	-1.75%
28-05-2014	24.8	25	24.6	24.76	-0.006039881	-0.60%
27-05-2014	26.4	26.4	24.65	24.91	-0.041672696	-4.17%
26-05-2014	26.1	27.1	25.25	25.97	0.000385134	0.04%
23-05-2014	25.95	26.24	25.6	25.96	0.01787844	1.79%
22-05-2014	25.24	25.77	25.1	25.5	0.023409123	2.34%
21-05-2014	25.1	25.2	24.55	24.91	-0.001604493	-0.16%
20-05-2014	25.6	26.25	24.7	24.95	-0.028059537	-2.81%
19-05-2014	23.46	25.9	23.46	25.66	0.097768382	9.78%
16-05-2014	22.85	24.95	21.25	23.27	0.030100419	3.01%
15-05-2014	22.6	22.75	21.6	22.58	0.007111141	0.71%
14-05-2014	22.15	22.5	21.65	22.42	0.015734197	1.57%
13-05-2014	21.75	22.4	21.5	22.07	0.026166285	2.62%
12/5/2014	20.75	21.65	20.7	21.5	0.03743626	3.74%
9/5/2014	20.2	20.9	20	20.71	0.032886399	3.29%
8/5/2014	20.1	20.2	20	20.04	-0.002989539	-0.30%
7/5/2014	20.2	20.3	20	20.1	-0.004962789	-0.50%

6/5/2014	20.25	20.3	20.15	20.2	0.007453451	0.75%
5/5/2014	19.9	20.25	19.8	20.05	0.012547216	1.25%
2/5/2014	19.8	20	19.6	19.8	0.004555817	0.46%
30-04-2014	19.9	20.05	19.57	19.71	-0.003039516	-0.30%
29-04-2014	19.85	19.9	19.71	19.77	-0.003030305	-0.30%
28-04-2014	19.98	19.98	19.78	19.83	-0.007535831	-0.75%
25-04-2014	20.21	20.21	19.92	19.98	-0.007479466	-0.75%
23-04-2014	20.12	20.31	20.02	20.13	0.002486945	0.25%
22-04-2014	19.8	20.22	19.8	20.08	0.010513238	1.05%
21-04-2014	19.8	19.92	19.71	19.87	0.008084935	0.81%
17-04-2014	19.48	19.8	19.35	19.71	0.015853055	1.59%
16-04-2014	19.61	19.7	19.35	19.4	-0.0102565	-1.03%
15-04-2014	19.6	19.7	19.4	19.6	-0.003056548	-0.31%
11/4/2014	19.85	19.85	19.6	19.66	-0.009617892	-0.96%
10/4/2014	19.7	19.9	19.5	19.85	0.007585371	0.76%
9/4/2014	18.25	19.75	18.25	19.7	0.01534557	1.53%
7/4/2014	19.35	20.5	19.15	19.4	0.002063984	0.21%
4/4/2014	19.1	19.41	18	19.36		

Annual Volatility = 22.74%

DATE	OPEN	HIGH	LOW	CLOSE	Log Price Change	%age Log
30-12-2015	21.3	21.34	21.18	21.23	0.002357936	0.24%
29-12-2015	21.25	21.34	21	21.18	-0.005180139	-0.52%
28-12-2015	21	21.34	21	21.29	0.011336919	1.13%
23-12-2015	20.8	21.09	20.8	21.05	0.011947573	1.19%
21-12-2015	20.43	20.9	20.42	20.8	0.01892801	1.89%
18-12-2015	20.56	20.62	20.41	20.41	-0.002935423	-0.29%
17-12-2015	20.63	20.63	20.2	20.47	-0.001952172	-0.20%
16-12-2015	20.25	20.66	20.25	20.51	0.009799196	0.98%
15-12-2015	20.19	20.35	20.15	20.31	0.007412932	0.74%
14-12-2015	19.9	20.22	19.9	20.16	0.011474309	1.15%
11/12/2015	20.1	20.19	19.9	19.93	-0.011474309	-1.15%
10/12/2015	20.12	20.2	20.05	20.16	-0.000991572	-0.10%
9/12/2015	20.2	20.4	20.1	20.18	-0.011332962	-1.13%
8/12/2015	20.8	20.8	20.31	20.41	-0.028021157	-2.80%
7/12/2015	21.21	21.21	20.85	20.99	-0.012310762	-1.23%
4/12/2015	21.2	21.3	21.04	21.25	0	0.00%
3/12/2015	21.37	21.55	21.16	21.25	-0.013554776	-1.36%
2/12/2015	21.65	21.65	21.41	21.54	0	0.00%

1/12/2015	21.49	21.54	21.18	21.54	0.013554776	1.36%
30-11-2015	21.25	21.37	21.12	21.25	-0.00609901	-0.61%
26-11-2015	21.15	21.42	21.12	21.38	0.014605678	1.46%
24-11-2015	21.02	21.38	20.95	21.07	0.004757383	0.48%
23-11-2015	21.06	21.09	20.9	20.97	-0.002857145	-0.29%
20-11-2015	20.81	21.22	20.66	21.03	0.015816289	1.58%
19-11-2015	20.78	20.78	20.61	20.7	0.007272759	0.73%
18-11-2015	20.7	20.92	20.51	20.55	-0.006306109	-0.63%
17-11-2015	20.72	20.72	20.5	20.68	0.007767029	0.78%
16-11-2015	20.52	20.75	20.41	20.52	-0.010664182	-1.07%
13-11-2015	20.65	20.83	20.61	20.74	-0.004330052	-0.43%
11/11/2015	20.8	21.49	20.74	20.83	0.007227206	0.72%
10/11/2015	21.15	21.15	20.51	20.68	-0.023890291	-2.39%
9/11/2015	21	21.35	20.88	21.18	-0.014995595	-1.50%
6/11/2015	21.4	21.55	21.13	21.5	0.005129412	0.51%
5/11/2015	21.39	21.68	21.3	21.39	-0.003267214	-0.33%
4/11/2015	21.3	21.56	21.3	21.46	0.004670723	0.47%
3/11/2015	21	21.37	21	21.36	0.016045649	1.60%
2/11/2015	20.98	21.06	20.78	21.02	0.002381521	0.24%
30-10-2015	21.01	21.21	20.94	20.97	-0.004757383	-0.48%
29-10-2015	21.35	21.35	21.01	21.07	-0.011795371	-1.18%
28-10-2015	21.25	21.49	21	21.32	-0.000468933	-0.05%
27-10-2015	21.5	21.52	21.22	21.33	-0.009797139	-0.98%
26-10-2015	21.85	21.87	21.43	21.54	-0.012915309	-1.29%
23-10-2015	21.88	21.98	21.76	21.82	0.003673099	0.37%
21-10-2015	21.75	21.99	21.55	21.74	-0.005961953	-0.60%
20-10-2015	22.12	22.12	21.72	21.87	0.001372684	0.14%
19-10-2015	22	22.07	21.55	21.84	-0.009115833	-0.91%
16-10-2015	21.8	22.04	21.75	22.04	0.003181098	0.32%
15-10-2015	21.7	21.99	21.7	21.97	0.009145011	0.91%
14-10-2015	21.75	21.85	21.65	21.77	0.002759891	0.28%
13-10-2015	21.92	21.92	21.2	21.71	-0.010082579	-1.01%
12/10/2015	21.87	22.09	21.87	21.93	-0.001822324	-0.18%
9/10/2015	22.34	22.35	21.87	21.97	0.002278424	0.23%
8/10/2015	22	22.22	21.8	21.92	-0.003642991	-0.36%
7/10/2015	21.61	22.2	21.61	22	0.009132484	0.91%
6/10/2015	21.53	21.92	21.52	21.8	0.017584905	1.76%
5/10/2015	21	22	20.6	21.42	0.027450848	2.75%
1/10/2015	20.85	21	20.65	20.84	0.001440576	0.14%
30-09-2015	20.37	20.85	20.37	20.81	0.026785142	2.68%
29-09-2015	20.2	20.38	20.05	20.26	-0.002464877	-0.25%

28-09-2015	20.5	20.52	20.2	20.31	-0.007847024	-0.78%
24-09-2015	20.95	20.95	20.38	20.47	-0.014549238	-1.45%
23-09-2015	20.64	20.84	20.56	20.77	0.001445435	0.14%
22-09-2015	21.15	21.2	20.68	20.74	-0.020993137	-2.10%
21-09-2015	20.93	21.33	20.92	21.18	0.011873804	1.19%
18-09-2015	21	21.08	20.84	20.93	0.009119334	0.91%
16-09-2015	20.83	20.83	20.6	20.74	0.001930503	0.19%
15-09-2015	20.85	20.92	20.69	20.7	-0.007220248	-0.72%
14-09-2015	20.44	20.93	20.4	20.85	0.007220248	0.72%
11/9/2015	20.8	20.91	20.61	20.7	-0.001448226	-0.14%
10/9/2015	20.71	20.84	20.05	20.73	0.000965251	0.10%
9/9/2015	20.9	20.9	20.54	20.71	0.007755734	0.78%
8/9/2015	20.15	20.59	20	20.55	0.020649701	2.06%
7/9/2015	20.3	20.4	20.05	20.13	-0.021136201	-2.11%
4/9/2015	20.51	21	20.03	20.56	-0.011605546	-1.16%
3/9/2015	21	21	20.63	20.8	0.006753523	0.68%
2/9/2015	21.01	21.25	20.5	20.66	-0.024385621	-2.44%
1/9/2015	21.53	21.63	21.03	21.17	-0.01313956	-1.31%
31-08-2015	21.3	21.77	21.15	21.45	-0.00232829	-0.23%
28-08-2015	21.46	21.79	21.4	21.5	0.013108802	1.31%
27-08-2015	20.94	21.4	20.9	21.22	0.020472031	2.05%
26-08-2015	20.78	21.1	20.71	20.79	0.00482161	0.48%
25-08-2015	20.3	20.8	19.8	20.69	0.010201692	1.02%
24-08-2015	21.8	21.8	20.01	20.48	-0.066124177	-6.61%
21-08-2015	22.05	22.05	21.55	21.88	-0.01496966	-1.50%
20-08-2015	22.5	22.5	22.16	22.21	-0.016078953	-1.61%
19-08-2015	22.4	22.88	22.4	22.57	-0.013641576	-1.36%
18-08-2015	23.15	23.16	22.71	22.88	-0.01518138	-1.52%
17-08-2015	23.05	23.29	23	23.23	0.000430571	0.04%
14-08-2015	23.05	23.3	22.91	23.22	0.006480904	0.65%
13-08-2015	23	23.25	22.87	23.07	0.004344055	0.43%
12/8/2015	23.7	23.7	22.82	22.97	-0.036336547	-3.63%
11/8/2015	24.15	24.15	23.76	23.82	-0.012101128	-1.21%
10/8/2015	24.26	24.27	24.02	24.11	-0.006202211	-0.62%
7/8/2015	24	24.47	24	24.26	-0.007801312	-0.78%
6/8/2015	24.5	24.57	24.31	24.45	0.001227747	0.12%
5/8/2015	24.57	24.63	24.4	24.42	-0.005309386	-0.53%
4/8/2015	24.66	24.66	24.3	24.55	0.006128722	0.61%
3/8/2015	24.56	24.58	24.33	24.4	-0.005313726	-0.53%
31-07-2015	24.27	24.7	24.27	24.53	0.014784664	1.48%
30-07-2015	24.11	24.3	24.02	24.17	0.004145943	0.41%

29-07-2015	24.03	24.24	24.02	24.07	0.001663202	0.17%
28-07-2015	24.2	24.29	23.95	24.03	-0.010761693	-1.08%
27-07-2015	24.7	24.7	24.27	24.29	-0.014712157	-1.47%
24-07-2015	24.8	25.16	24.35	24.65	-0.011294997	-1.13%
23-07-2015	25.1	25.14	24.92	24.93	-0.00480193	-0.48%
22-07-2015	25.1	25.2	24.83	25.05	0.009224048	0.92%
21-07-2015	25.2	25.29	24.77	24.82	-0.02152335	-2.15%
20-07-2015	25.11	25.4	25.11	25.36	0.002368734	0.24%
17-07-2015	25.6	25.6	25.17	25.3	-0.008658063	-0.87%
16-07-2015	25.25	25.55	25.25	25.52	0.010636303	1.06%
15-07-2015	25.08	25.32	25.08	25.25	0.006356795	0.64%
14-07-2015	24.9	25.13	24.87	25.09	0.010416761	1.04%
13-07-2015	24.75	24.85	24.65	24.83	0.001612253	0.16%
10/7/2015	24.91	24.91	24.5	24.79	-0.001612253	-0.16%
9/7/2015	24.92	25.02	24.71	24.83	-0.007622906	-0.76%
8/7/2015	25.3	25.3	24.9	25.02	-0.013497625	-1.35%
7/7/2015	25.2	25.54	25.2	25.36	0.005139367	0.51%
6/7/2015	25.15	25.28	24.51	25.23	0.003175866	0.32%
3/7/2015	25	25.39	25	25.15	-0.004760025	-0.48%
2/7/2015	25.3	25.48	25.1	25.27	0.002773927	0.28%
1/7/2015	25.09	25.48	24.55	25.2	0.00796817	0.80%
30-06-2015	24.86	25.05	24.8	25	0.010454458	1.05%
29-06-2015	25	25	24.26	24.74	-0.009654138	-0.97%
26-06-2015	25.25	25.31	24.82	24.98	-0.011146612	-1.11%
25-06-2015	25.22	25.31	25.19	25.26	-0.006314149	-0.63%
24-06-2015	25.5	25.62	25.35	25.42	-0.004317965	-0.43%
23-06-2015	25.2	25.55	25.16	25.53	0.01579188	1.58%
22-06-2015	24.86	25.2	24.3	25.13	0.009194548	0.92%
19-06-2015	24.65	24.99	24.63	24.9	0.0137487	1.37%
18-06-2015	24.65	24.8	24.51	24.56	0.004488887	0.45%
17-06-2015	24.5	24.75	24.24	24.45	0.000409082	0.04%
16-06-2015	24.25	24.58	24.21	24.44	0.00245801	0.25%
15-06-2015	24.3	24.51	24.2	24.38	0.002052967	0.21%
12/6/2015	24.06	24.4	21.7	24.33	-0.001232286	-0.12%
11/6/2015	24.55	24.8	24.22	24.36	-0.011834458	-1.18%
10/6/2015	24.45	24.68	24.42	24.65	0.013066744	1.31%
9/6/2015	24.25	24.52	24.25	24.33	-0.005328973	-0.53%
8/6/2015	24.61	24.8	24.31	24.46	-0.00773777	-0.77%
5/6/2015	24.65	24.99	24.12	24.65	0.025057791	2.51%
4/6/2015	24.3	24.3	23.91	24.04	-0.004979263	-0.50%
3/6/2015	24.43	24.72	24	24.16	-0.018454491	-1.85%

2/6/2015	24.8	25	24.5	24.61	-0.022897164	-2.29%
1/6/2015	25.15	25.5	25.05	25.18	-0.002380009	-0.24%
29-05-2015	24.87	25.34	24.87	25.24	0.01920059	1.92%
28-05-2015	25	25	24.3	24.76	-0.00684245	-0.68%
27-05-2015	24.47	24.99	24.47	24.93	0.008459265	0.85%
26-05-2015	24.56	24.8	24.52	24.72	-0.002827713	-0.28%
25-05-2015	24.6	24.84	24.52	24.79	0.001210898	0.12%
22-05-2015	24.5	24.85	24.5	24.76	0.008925009	0.89%
21-05-2015	24.25	24.65	24.25	24.54	0.010239696	1.02%
20-05-2015	24.39	24.54	24.23	24.29	-0.006156391	-0.62%
19-05-2015	24.25	24.46	24.11	24.44	-0.002043737	-0.20%
18-05-2015	24.36	24.56	24.3	24.49	0.009848254	0.98%
15-05-2015	24.38	24.38	24	24.25	-0.003293539	-0.33%
14-05-2015	24.09	24.39	24.09	24.33	0.010328536	1.03%
13-05-2015	24.19	24.23	23.81	24.08	0.012957339	1.30%
12/5/2015	24.5	25.15	23.73	23.77	-0.020404622	-2.04%
11/5/2015	24	24.3	23.85	24.26	0.01286058	1.29%
8/5/2015	24.14	24.14	23.61	23.95	0.009228253	0.92%
7/5/2015	23.88	24.1	23.61	23.73	-0.019199254	-1.92%
6/5/2015	24.72	24.72	24.01	24.19	-0.03173578	-3.17%
5/5/2015	24.62	25	24.55	24.97	0.017778246	1.78%
4/5/2015	23.74	24.72	23.74	24.53	0.037379767	3.74%
30-04-2015	23.98	23.98	23.51	23.63	-0.014285957	-1.43%
29-04-2015	23.88	24	23.65	23.97	-0.000834028	-0.08%
28-04-2015	23.91	24.2	23.8	23.99	-0.00124974	-0.12%
27-04-2015	24.09	24.35	23.84	24.02	-0.007878954	-0.79%
24-04-2015	24.28	24.5	24.15	24.21	-0.01272334	-1.27%
23-04-2015	24.65	24.75	24.25	24.52	0.004496227	0.45%
22-04-2015	24	24.65	24	24.41	-0.006126219	-0.61%
21-04-2015	24.5	24.8	24.41	24.56	-0.002846109	-0.28%
20-04-2015	25.15	25.15	24.5	24.63	-0.02129022	-2.13%
17-04-2015	25.2	25.34	25.1	25.16	-0.002381899	-0.24%
16-04-2015	25.17	25.29	24.8	25.22	0.001984521	0.20%
15-04-2015	25	25.55	25	25.17	0	0.00%
13-04-2015	25	25.33	25	25.17	-0.001984521	-0.20%
10/4/2015	25	25.4	25	25.22	0.000396589	0.04%
9/4/2015	25.25	25.25	24.88	25.21	0.004771381	0.48%
8/4/2015	24.79	25.15	24.65	25.09	0.020943174	2.09%
7/4/2015	24.6	24.7	24.4	24.57	0	0.00%
6/4/2015	24.33	24.8	24.3	24.57	0.00981603	0.98%
1/4/2015	24.25	24.35	24.1	24.33	0.002057191	0.21%

31-03-2015	23.96	24.6	23.96	24.28	0.012849918	1.28%
30-03-2015	23.87	24.11	23.6	23.97	0.010906148	1.09%
27-03-2015	24	24.09	23.47	23.71	-0.007563061	-0.76%
26-03-2015	24	24.23	23.82	23.89	-0.014956656	-1.50%
25-03-2015	24.25	24.3	24.02	24.25	-0.005756595	-0.58%
24-03-2015	24.25	24.56	24.2	24.39	0.009888832	0.99%
23-03-2015	24.24	24.4	23.95	24.15	-0.001654945	-0.17%
20-03-2015	24.9	24.9	23.76	24.19	-0.003713642	-0.37%
19-03-2015	24.25	24.66	24.2	24.28	0.003300333	0.33%
18-03-2015	24.2	24.5	24.17	24.2	-0.008230499	-0.82%
17-03-2015	24.2	24.49	24.05	24.4	0.008230499	0.82%
16-03-2015	24.31	24.38	24.05	24.2	-0.007000234	-0.70%
13-03-2015	24.53	24.7	24.31	24.37	-0.00532025	-0.53%
12/3/2015	24.85	24.85	24.33	24.5	-0.000815994	-0.08%
11/3/2015	24.5	24.8	24.37	24.52	0.000407914	0.04%
10/3/2015	24.51	24.61	24.32	24.51	0.006138755	0.61%
9/3/2015	24.75	24.83	24.23	24.36	-0.004914015	-0.49%
5/3/2015	24.92	25	24.31	24.48	-0.021019367	-2.10%
4/3/2015	25.2	25.35	24.71	25	-0.007571265	-0.76%
3/3/2015	25	25.28	25	25.19	0.003579244	0.36%
2/3/2015	24.99	25.25	24.7	25.1	0.00840173	0.84%
28-02-2015	24.89	25.07	24.71	24.89	0.002413517	0.24%
27-02-2015	24.79	24.99	24.25	24.83	0.018289475	1.83%
26-02-2015	24.5	24.5	24.14	24.38	-0.00694873	-0.69%
25-02-2015	24.26	24.65	24.26	24.55	0.013946083	1.39%
24-02-2015	24.6	24.6	24.13	24.21	-0.011090687	-1.11%
23-02-2015	24.65	24.75	24.27	24.48	-0.005702663	-0.57%
20-02-2015	24.76	24.84	24.6	24.62	0.004477923	0.45%
19-02-2015	24.53	24.86	24.42	24.51	-0.005289941	-0.53%
18-02-2015	24.68	24.77	24.4	24.64	0.002031282	0.20%
16-02-2015	24.49	24.99	24.32	24.59	0.010218769	1.02%
13-02-2015	25	25	24.16	24.34	-0.002052125	-0.21%
12/2/2015	24.56	24.75	24.13	24.39	-0.002457004	-0.25%
11/2/2015	24.45	24.8	24.4	24.45	0.001227747	0.12%
10/2/2015	24.52	24.7	24.41	24.42	-0.00896867	-0.90%
6/2/2015	24.81	24.87	24.62	24.64	-0.010094978	-1.01%
5/2/2015	25.12	25.2	24.6	24.89	-0.015547453	-1.55%
4/2/2015	25.25	25.35	24.91	25.28	0.003566479	0.36%
3/2/2015	24.64	25.24	24.64	25.19	0.011177761	1.12%
2/2/2015	24.55	25.18	24.55	24.91	-0.009190874	-0.92%
30-01-2015	25	25.29	24.86	25.14	0.003187254	0.32%

29-01-2015	25.25	25.25	24.87	25.06	-0.006760813	-0.68%
28-01-2015	25	25.39	25	25.23	0.017190109	1.72%
27-01-2015	24.91	25	24.7	24.8	-0.011227063	-1.12%
23-01-2015	25.15	25.25	24.91	25.08	-0.001195457	-0.12%
22-01-2015	25	25.2	24.91	25.11	0.006793233	0.68%
21-01-2015	25.17	25.17	24.79	24.94	0.003615188	0.36%
20-01-2015	25.05	25.15	24.77	24.85	-0.007217353	-0.72%
19-01-2015	24.8	25.28	24.8	25.03	0.005207302	0.52%
16-01-2015	24.79	24.97	24.7	24.9	0.009279873	0.93%
15-01-2015	24.5	24.89	24.5	24.67	0.018409192	1.84%
14-01-2015	24	24.74	24	24.22	-0.01271812	-1.27%
13-01-2015	24.6	24.7	24.35	24.53	-0.001222245	-0.12%
12/1/2015	24.94	24.94	24.5	24.56	-0.014551591	-1.46%
9/1/2015	24.55	25	24.55	24.92	0.007249327	0.72%
8/1/2015	24.55	24.88	24.55	24.74	0.008524509	0.85%
7/1/2015	24.35	24.74	24.24	24.53	0.00449439	0.45%
6/1/2015	25	25	24.31	24.42	-0.028261873	-2.83%
5/1/2015	25.2	25.5	25	25.12	-0.004369421	-0.44%
2/1/2015	25.29	25.48	25.12	25.23	0.009558018	0.96%
1/1/2015	25.05	25.13	24.91	24.99	0.001601923	0.16%

Annual Volatility = 18.70%

DATE	OPEN	HIGH	LOW	CLOSE	Log Price Change	%age Log
29-12-2016	25	25.2	24.8	25.08	0.003594971	0.36%
28-12-2016	24.79	25.01	24.71	24.99	0.019802627	1.98%
27-12-2016	24.49	24.65	24.36	24.5	0.00081666	0.08%
26-12-2016	24.5	24.6	24.46	24.48	-0.0158058	-1.58%
23-12-2016	25	25	24.83	24.87	-0.000803859	-0.08%
22-12-2016	25	25.24	24.85	24.89	-0.016338279	-1.63%
21-12-2016	25.23	25.3	25.23	25.3	0.011928571	1.19%
20-12-2016	25.2	25.2	24.94	25	-0.007174204	-0.72%
19-12-2016	24.9	25.24	24.9	25.18	0.011182225	1.12%
16-12-2016	25.03	25.23	24.9	24.9	-0.013958352	-1.40%
15-12-2016	25.36	25.4	25.15	25.25	-0.00552924	-0.55%
14-12-2016	25.5	25.64	25.12	25.39	-0.016019096	-1.60%
13-12-2016	26	26	25.71	25.8	0.001551591	0.16%
12/12/2016	25.31	25.9	25.31	25.76	0	0.00%
9/12/2016	25.8	25.85	25.65	25.76	0.000388274	0.04%
8/12/2016	25.5	25.86	25.5	25.75	0.014079231	1.41%

7/12/2016	25.5	25.63	25.39	25.39	0.003155821	0.32%
6/12/2016	25.3	25.53	25.3	25.31	0.000395179	0.04%
5/12/2016	25.34	25.34	25.3	25.3	0.001186474	0.12%
2/12/2016	25.22	25.45	25.2	25.27	-0.002371543	-0.24%
1/12/2016	25.67	25.67	25.25	25.33	-0.000789266	-0.08%
30-11-2016	25.2	25.35	25.2	25.35	0.01030937	1.03%
29-11-2016	25.23	25.25	25.09	25.09	0.002394255	0.24%
28-11-2016	24.84	25.1	24.84	25.03	0.007619848	0.76%
25-11-2016	24.5	24.9	24.41	24.84	0.0207451	2.07%
24-11-2016	24.66	24.66	24.13	24.33	-0.017519291	-1.75%
23-11-2016	24.51	24.83	24.32	24.76	0.007296344	0.73%
22-11-2016	24.49	24.65	24.3	24.58	0.014754366	1.48%
21-11-2016	24.65	24.65	24.19	24.22	-0.021646751	-2.16%
18-11-2016	24.7	24.85	24.35	24.75	-0.001211387	-0.12%
17-11-2016	24.6	24.83	24.3	24.78	0.007290433	0.73%
16-11-2016	24.72	24.95	24.3	24.6	-0.001624696	-0.16%
15-11-2016	25	25.25	24.11	24.64	-0.018496707	-1.85%
11/11/2016	25.5	25.5	24.73	25.1	-0.025566781	-2.56%
10/11/2016	25.48	25.9	25.3	25.75	0.005061331	0.51%
9/11/2016	25	25.8	23.6	25.62	0.020107123	2.01%
8/11/2016	25	25.14	24.81	25.11	0.006392351	0.64%
7/11/2016	25	25.19	24.92	24.95	0.012502684	1.25%
4/11/2016	25	25	24.1	24.64	-0.012502684	-1.25%
3/11/2016	25.18	25.3	24.95	24.95	-0.011952334	-1.20%
2/11/2016	25.5	25.5	25.11	25.25	-0.023097523	-2.31%
1/11/2016	25	25.94	25	25.84	0.011286362	1.13%
30-10-2016	25.8	25.8	25.45	25.55	-0.00779731	-0.78%
28-10-2016	25.74	25.9	25.61	25.75	0.004280995	0.43%
27-10-2016	25.65	25.65	25.29	25.64	0.003516315	0.35%
26-10-2016	25.82	25.88	25.41	25.55	-0.010124697	-1.01%
25-10-2016	25.9	26	25.67	25.81	-0.003866981	-0.39%
24-10-2016	25.5	26	25.2	25.91	0.020667532	2.07%
21-10-2016	25.25	25.48	25.1	25.38	-0.000393933	-0.04%
20-10-2016	25.37	25.4	25.1	25.39	0.001182266	0.12%
19-10-2016	25.33	25.44	25.2	25.36	0.010305283	1.03%
18-10-2016	25.1	25.22	25.01	25.1	0.000398486	0.04%
17-10-2016	25.24	25.38	25.01	25.09	-0.002786071	-0.28%
14-10-2016	24.53	25.29	24.53	25.16	0.010387628	1.04%
13-10-2016	24.89	25.15	24.56	24.9	0.00402415	0.40%
10/10/2016	25.1	25.1	24.8	24.8	-0.008032172	-0.80%
7/10/2016	25.01	25.25	24.75	25	0.00080032	0.08%

6/10/2016	24.89	25.39	24.65	24.98	0.006828707	0.68%
5/10/2016	24.75	24.89	24.67	24.81	-0.003219319	-0.32%
4/10/2016	24.45	24.9	24.45	24.89	0.020702992	2.07%
3/10/2016	23.95	24.45	23.95	24.38	0.020303163	2.03%
30-09-2016	23.5	23.9	23.1	23.89	0.010096846	1.01%
29-09-2016	24.15	24.21	23.05	23.65	-0.014690715	-1.47%
28-09-2016	23.9	24	23.66	24	0.006269613	0.63%
27-09-2016	23.7	24.4	23.7	23.85	-0.014155107	-1.42%
26-09-2016	24.17	24.45	24.05	24.19	-0.002477293	-0.25%
23-09-2016	24.25	24.4	24.1	24.25	0.002063984	0.21%
22-09-2016	24.2	24.25	24.05	24.2	0.011637704	1.16%
21-09-2016	23.95	24.19	23.82	23.92	-0.000835771	-0.08%
20-09-2016	23.95	24.1	23.61	23.94	0.005025136	0.50%
19-09-2016	23.11	23.97	23.11	23.82	0.007585371	0.76%
16-09-2016	23.67	23.85	23.25	23.64	0.007643349	0.76%
15-09-2016	23.46	23.62	23.21	23.46	-0.001703578	-0.17%
14-09-2016	23.72	23.74	23.22	23.5	-0.000425441	-0.04%
12/9/2016	23.72	23.85	23.31	23.51	-0.022293247	-2.23%
9/9/2016	24	24.19	23.73	24.04	0.010874218	1.09%
8/9/2016	23.99	24.05	23.67	23.78	-0.000840689	-0.08%
7/9/2016	23.76	23.9	23.7	23.8	0.006745388	0.67%
6/9/2016	23.7	23.8	23.6	23.64	-0.002534856	-0.25%
2/9/2016	23.62	23.7	23.51	23.7	0.003804697	0.38%
1/9/2016	23.6	23.8	23.53	23.61	-0.00042346	-0.04%
31-08-2016	23.48	23.67	23.38	23.62	0.007223316	0.72%
30-08-2016	23.3	23.45	23.3	23.45	0.010718216	1.07%
29-08-2016	23.01	23.35	23	23.2	-0.002152853	-0.22%
26-08-2016	23.25	23.46	23.21	23.25	-0.005148017	-0.51%
25-08-2016	23.3	23.47	23.19	23.37	0.002141787	0.21%
24-08-2016	23	23.4	23	23.32	0.00559021	0.56%
23-08-2016	23.15	23.24	22.9	23.19	-0.004732209	-0.47%
22-08-2016	23	23.49	22.9	23.3	0.004301082	0.43%
19-08-2016	22.76	23.35	22.76	23.2	-0.004301082	-0.43%
18-08-2016	23.18	23.35	23.15	23.3	0.000429277	0.04%
17-08-2016	23.09	23.3	23.08	23.29	0.01209518	1.21%
16-08-2016	23	23.05	22.84	23.01	0.000434688	0.04%
12/8/2016	22.77	23.01	22.7	23	0.00873368	0.87%
11/8/2016	22.83	22.83	22.55	22.8	0	0.00%
10/8/2016	23.03	23.03	22.7	22.8	-0.010037178	-1.00%
9/8/2016	23.13	23.26	23	23.03	0.002608697	0.26%
8/8/2016	22.81	23.1	22.69	22.97	0.00698998	0.70%

5/8/2016	22.5	22.94	22.46	22.81	0.022612358	2.26%
4/8/2016	22.5	22.55	22.3	22.3	-0.00581267	-0.58%
3/8/2016	22.62	22.72	22.4	22.43	-0.006222242	-0.62%
2/8/2016	22.5	22.7	22.45	22.57	0.003106282	0.31%
1/8/2016	22.79	22.86	22.4	22.5	0	0.00%
29-07-2016	22.57	22.7	22.5	22.5	-0.000888494	-0.09%
28-07-2016	22.5	22.75	22.33	22.52	0.002667854	0.27%
27-07-2016	22.5	22.87	22.25	22.46	0	0.00%
26-07-2016	23	23	22.3	22.46	-0.012829196	-1.28%
25-07-2016	22.6	22.85	22.53	22.75	0.008386719	0.84%
22-07-2016	22.49	22.57	22.35	22.56	0.011591748	1.16%
21-07-2016	22.42	22.58	22.26	22.3	-0.000896459	-0.09%
20-07-2016	22.1	22.32	22.1	22.32	0.021282216	2.13%
19-07-2016	21.99	21.99	21.52	21.85	0.007810745	0.78%
18-07-2016	22	22.22	21.65	21.68	-0.014197628	-1.42%
15-07-2016	21.92	22.15	21.87	21.99	-0.011754204	-1.18%
14-07-2016	21.55	22.39	21.52	22.25	0.008122788	0.81%
13-07-2016	22	22.25	21.76	22.07	0.012768071	1.28%
12/7/2016	21.57	21.95	21.57	21.79	0.001377727	0.14%
11/7/2016	21.45	21.98	21.45	21.76	0.012485711	1.25%
8/7/2016	21.51	21.74	21.25	21.49	-0.008341105	-0.83%
7/7/2016	22.15	22.15	21.67	21.67	-0.017837198	-1.78%
5/7/2016	21.82	22.15	21.72	22.06	0.009565092	0.96%
4/7/2016	21.8	21.97	21.56	21.85	0.018942585	1.89%
1/7/2016	21.1	21.6	20.91	21.44	0.025509177	2.55%
30-06-2016	20.93	21.1	20.78	20.9	0.001915709	0.19%
29-06-2016	20.63	20.88	20.51	20.86	0.013513719	1.35%
28-06-2016	20.26	20.65	20.26	20.58	0.007315322	0.73%
27-06-2016	20.11	20.59	20.11	20.43	-0.002444391	-0.24%
24-06-2016	19.75	20.9	19.75	20.48	-0.01598484	-1.60%
23-06-2016	20.71	20.92	20.51	20.81	0.005783149	0.58%
22-06-2016	20.74	20.75	20.46	20.69	0.003389013	0.34%
21-06-2016	20.6	20.74	20.57	20.62	0.010726578	1.07%
20-06-2016	20.1	20.59	20.1	20.4	0.001962709	0.20%
17-06-2016	20.32	20.55	20.22	20.36	0.001966569	0.20%
16-06-2016	20.4	20.55	20.28	20.32	-0.008819263	-0.88%
15-06-2016	20.33	20.5	20.22	20.5	0.010789707	1.08%
14-06-2016	20.25	20.4	20.21	20.28	0.001480385	0.15%
13-06-2016	20.15	20.79	20.15	20.25	-0.006399234	-0.64%
10/6/2016	20.78	20.85	20.38	20.38	-0.01654539	-1.65%
9/6/2016	20.49	20.73	20.49	20.72	0.01654539	1.65%

8/6/2016	20.4	20.46	20.25	20.38	0.004425874	0.44%
7/6/2016	20.25	20.4	20.2	20.29	0.006923865	0.69%
6/6/2016	20.25	20.3	20.1	20.15	-0.008893339	-0.89%
3/6/2016	20.44	20.48	20.3	20.33	-0.002946957	-0.29%
2/6/2016	19.98	20.44	19.98	20.39	0.01432477	1.43%
1/6/2016	20	20.19	19.83	20.1	0.002490661	0.25%
31-05-2016	20.13	20.19	19.95	20.05	-0.003982086	-0.40%
30-05-2016	19.75	20.2	19.75	20.13	0.014007233	1.40%
27-05-2016	19.95	20.1	19.83	19.85	0.010126669	1.01%
26-05-2016	19.8	19.84	19.53	19.65	0	0.00%
25-05-2016	19.56	19.68	19.52	19.65	0.008175825	0.82%
24-05-2016	19.45	19.53	19.36	19.49	-0.001025641	-0.10%
23-05-2016	19.53	19.74	19.43	19.51	-0.00255951	-0.26%
20-05-2016	19.7	19.83	19.52	19.56	0.005639595	0.56%
19-05-2016	19.8	19.89	19.3	19.45	-0.020860589	-2.09%
18-05-2016	19.81	19.95	19.75	19.86	0	0.00%
17-05-2016	19.74	19.99	19.61	19.86	0.012158204	1.22%
16-05-2016	19.6	19.76	19.42	19.62	0.001530222	0.15%
13-05-2016	19.79	19.79	19.55	19.59	-0.009146405	-0.91%
12/5/2016	19.84	19.84	19.64	19.77	0.006088299	0.61%
11/5/2016	19.69	19.93	19.54	19.65	-0.010126669	-1.01%
10/5/2016	19.81	19.99	19.76	19.85	-0.005526264	-0.55%
9/5/2016	19.25	20.05	19.25	19.96	0.013111635	1.31%
6/5/2016	19.59	19.76	19.45	19.7	0.001015744	0.10%
5/5/2016	19.75	19.82	19.59	19.68	-0.00152323	-0.15%
4/5/2016	19.91	19.92	19.62	19.71	-0.016604155	-1.66%
3/5/2016	20.25	20.35	20	20.04	-0.005474012	-0.55%
2/5/2016	20.23	20.33	20.11	20.15	-0.00544421	-0.54%
29-04-2016	20.18	20.36	20.05	20.26	0.003956484	0.40%
28-04-2016	20.5	20.58	20	20.18	-0.014756785	-1.48%
27-04-2016	20.24	20.58	20.17	20.48	0.016244512	1.62%
26-04-2016	19.85	20.25	19.85	20.15	0.005474012	0.55%
25-04-2016	20.01	20.13	19.91	20.04	0.002498128	0.25%
22-04-2016	20.05	20.18	19.91	19.99	0.001501878	0.15%
21-04-2016	19.75	20.05	19.63	19.96	0.010070579	1.01%
20-04-2016	19.7	19.81	19.52	19.76	0.013758179	1.38%
18-04-2016	19.59	19.6	19.32	19.49	-0.008175825	-0.82%
13-04-2016	19.56	19.7	19.42	19.65	0.013319869	1.33%
12/4/2016	19.4	19.48	19.26	19.39	-0.001030928	-0.10%
11/4/2016	19	19.44	18.76	19.41	0.000515331	0.05%
8/4/2016	19.26	19.48	19.26	19.4	0.00516797	0.52%

7/4/2016	19.25	19.5	19.06	19.3	0.000518269	0.05%
6/4/2016	19.17	19.29	19.07	19.29	0.013570146	1.36%
5/4/2016	19.25	19.48	19	19.03	-0.017192401	-1.72%
4/4/2016	19.36	19.59	19.35	19.36	-0.004123717	-0.41%
1/4/2016	19.79	19.79	19.2	19.44	-0.021878258	-2.19%
31-03-2016	19.79	19.99	19.4	19.87	0.006057565	0.61%
30-03-2016	19.45	19.95	19.45	19.75	0.022012663	2.20%
29-03-2016	19.6	19.6	19.24	19.32	-0.001551591	-0.16%
28-03-2016	19.8	19.84	19.03	19.35	-0.017926216	-1.79%
23-03-2016	19.99	19.99	19.53	19.7	-0.006577307	-0.66%
22-03-2016	19.72	19.97	19.58	19.83	0.001514005	0.15%
21-03-2016	19.7	19.85	19.5	19.8	0.013218291	1.32%
18-03-2016	19.39	19.55	19.36	19.54	0	0.00%
17-03-2016	19.25	19.65	19.25	19.54	0.02749849	2.75%
16-03-2016	19.09	19.25	18.95	19.01	-0.00681523	-0.68%
15-03-2016	19.22	19.25	19.1	19.14	-0.004171018	-0.42%
14-03-2016	19.15	19.35	19.15	19.22	0.00469362	0.47%
11/3/2016	19.25	19.35	19.01	19.13	-0.001566989	-0.16%
10/3/2016	19.25	19.4	19.11	19.16	-0.002606204	-0.26%
9/3/2016	19.15	19.37	19.12	19.21	0	0.00%
8/3/2016	19.3	19.4	19.18	19.21	0.002606204	0.26%
4/3/2016	18.83	19.27	18.8	19.16	0.019499959	1.95%
3/3/2016	18.89	18.95	18.48	18.79	0.003732342	0.37%
2/3/2016	18.6	18.9	18.6	18.72	0.009661911	0.97%
1/3/2016	18.8	18.8	18.2	18.54	0.01576548	1.58%
29-02-2016	18.5	18.77	18.2	18.25	-0.018458722	-1.85%
26-02-2016	18.55	18.75	18.47	18.59	0.00485307	0.49%
25-02-2016	18.31	18.63	18.3	18.5	0.007051833	0.71%
24-02-2016	18.25	18.7	18.25	18.37	-0.010828476	-1.08%
23-02-2016	18.81	18.99	18.51	18.57	-0.020256556	-2.03%
22-02-2016	18.83	19	18.81	18.95	0.010610179	1.06%
19-02-2016	18.78	18.88	18.52	18.75	-0.006909408	-0.69%
18-02-2016	18.9	19	18.7	18.88	0.007442884	0.74%
17-02-2016	18.55	18.76	18.27	18.74	0.01234915	1.23%
16-02-2016	18.9	19.1	18.51	18.51	-0.022436839	-2.24%
15-02-2016	18.2	19.05	18.19	18.93	0.052044264	5.20%
12/2/2016	18.42	18.42	17.5	17.97	-0.024190294	-2.42%
11/2/2016	18.84	19.2	18.25	18.41	-0.037317763	-3.73%
10/2/2016	19.29	19.5	18.87	19.11	-0.015061308	-1.51%
9/2/2016	20.5	20.5	19.11	19.4	-0.017880425	-1.79%
8/2/2016	19.7	20.12	19.51	19.75	0	0.00%

5/2/2016	19.7	19.88	19.55	19.75	0.000506457	0.05%
4/2/2016	19.83	19.83	19.51	19.74	0.009160369	0.92%
3/2/2016	19.7	19.7	19.3	19.56	-0.010173028	-1.02%
2/2/2016	20.12	20.12	19.7	19.76	-0.016064603	-1.61%
1/2/2016	20.1	20.32	19.91	20.08	0.001495141	0.15%
29-01-2016	19.8	20.28	19.52	20.05	0.014063517	1.41%
28-01-2016	19.69	19.77	19.41	19.77	0.012726056	1.27%
27-01-2016	19.39	19.6	19.27	19.52	-0.002047084	-0.20%
25-01-2016	19.5	19.99	19.45	19.56	0.006668401	0.67%
22-01-2016	19.3	20	18.9	19.43	0.028185582	2.82%
21-01-2016	19.22	19.45	18.78	18.89	-0.012102226	-1.21%
20-01-2016	19.39	19.6	18.95	19.12	-0.021728739	-2.17%
19-01-2016	19.5	19.69	19.3	19.54	-0.004085808	-0.41%
18-01-2016	19.92	19.93	19.42	19.62	-0.024170361	-2.42%
15-01-2016	20.37	20.49	20	20.1	-0.013834213	-1.38%
14-01-2016	20.4	20.48	20.1	20.38	-0.005382934	-0.54%
13-01-2016	20.75	20.77	20	20.49	-0.002923979	-0.29%
12/1/2016	20.89	20.89	20.31	20.55	-0.007272759	-0.73%
11/1/2016	20.95	20.95	20.5	20.7	-0.012959145	-1.30%
8/1/2016	20.9	21.01	20.81	20.97	-0.00190567	-0.19%
7/1/2016	21.35	21.35	20.85	21.01	-0.014177931	-1.42%
6/1/2016	21.52	21.7	21.26	21.31	-0.010735226	-1.07%
5/1/2016	21.4	21.54	21.38	21.54	0.014025475	1.40%
4/1/2016	21.57	21.84	21.12	21.24	-0.021886788	-2.19%
1/1/2016	21.5	21.8	21.5	21.71	0.010650714	1.07%

Annual Volatility = 18.46%

DATE	OPEN	HIGH	LOW	CLOSE	Log Price Change	%age Log
27-04-2017	29.7	29.87	29.59	29.69	0.001010952	0.10%
26-04-2017	29.84	29.92	29.44	29.66	-0.006050439	-0.61%
25-04-2017	29.64	29.87	29.62	29.84	0.008751318	0.88%
24-04-2017	29.49	29.61	29.4	29.58	0.006103783	0.61%
21-04-2017	29.68	29.7	29.3	29.4	-0.003395589	-0.34%
20-04-2017	29.61	29.83	29.4	29.5	0	0.00%
19-04-2017	29.31	29.58	29.2	29.5	0.006461509	0.65%
18-04-2017	29.5	29.77	29.11	29.31	-0.005444042	-0.54%
17-04-2017	29.6	29.84	29.32	29.47	-0.002710947	-0.27%
13-04-2017	29.4	29.69	29.38	29.55	0.004748991	0.47%
12/4/2017	29.6	29.75	29.19	29.41	-0.004748991	-0.47%

11/4/2017	28.99	29.69	28.99	29.55	0.019132801	1.91%
10/4/2017	28.7	29.07	28.7	28.99	0.00900907	0.90%
7/4/2017	28.5	28.84	28.48	28.73	0.004884867	0.49%
6/4/2017	28.39	28.63	28.32	28.59	0.007020036	0.70%
5/4/2017	28.21	28.42	28.21	28.39	0.003175166	0.32%
3/4/2017	28.18	28.33	28.07	28.3	0.002830858	0.28%
31-03-2017	27.88	28.3	27.87	28.22	0.01319798	1.32%
30-03-2017	27.93	28.12	27.81	27.85	0.002156723	0.22%
28-03-2017	27.49	27.99	27.45	27.79	-0.006098674	-0.61%
27-03-2017	28.1	28.18	27.81	27.96	-0.008901608	-0.89%
24-03-2017	28.1	28.29	28.02	28.21	0.005687893	0.57%
23-03-2017	27.97	28.15	27.92	28.05	0.008233445	0.82%
22-03-2017	27.9	27.95	27.69	27.82	-0.006092117	-0.61%
21-03-2017	27.98	28.04	27.85	27.99	0.000357334	0.04%
20-03-2017	27.93	28.04	27.82	27.98	0.003221768	0.32%
17-03-2017	27.85	28.04	27.83	27.89	-0.001075076	-0.11%
16-03-2017	27.8	27.97	27.7	27.92	0.008633147	0.86%
15-03-2017	27.78	27.89	27.66	27.68	-0.003966113	-0.40%
14-03-2017	28.15	28.2	27.75	27.79	0.003243831	0.32%
10/3/2017	27.65	27.78	27.56	27.7	0.001445087	0.14%
9/3/2017	27.9	27.9	27.6	27.66	-0.00792226	-0.79%
8/3/2017	28.29	28.37	27.71	27.88	-0.014952219	-1.50%
7/3/2017	28.17	28.35	28.17	28.3	0.001768347	0.18%
6/3/2017	28	28.3	28	28.25	0.008888947	0.89%
3/3/2017	27.82	28.1	27.76	28	0.004294924	0.43%
2/3/2017	28.1	28.27	27.83	27.88	-0.007147993	-0.71%
1/3/2017	28.2	28.35	28.03	28.08	-0.001423488	-0.14%
28-02-2017	28.27	28.34	28.02	28.12	-0.00496631	-0.50%
27-02-2017	28.42	28.47	28.16	28.26	0.001062135	0.11%
23-02-2017	28.25	28.48	28.16	28.23	-0.005299429	-0.53%
22-02-2017	28.31	28.55	28.31	28.38	0.002469573	0.25%
21-02-2017	28.1	28.34	28.07	28.31	0.007801458	0.78%
20-02-2017	27.5	28.12	27.5	28.09	0.009299066	0.93%
17-02-2017	27.68	27.86	27.6	27.83	0.006488848	0.65%
16-02-2017	27.5	27.7	27.3	27.65	0.006167261	0.62%
15-02-2017	27.55	27.92	27.43	27.48	-0.009777373	-0.98%
14-02-2017	27.99	27.99	27.5	27.75	0.001081666	0.11%
13-02-2017	27.92	27.92	27.47	27.72	-0.00790518	-0.79%
10/2/2017	28.1	28.1	27.85	27.94	-0.003216011	-0.32%
9/2/2017	27.87	28.14	27.87	28.03	0.006083397	0.61%
8/2/2017	27.6	27.93	27.5	27.86	0.013733501	1.37%

7/2/2017	28	28.2	27.33	27.48	-0.018746043	-1.87%
6/2/2017	27.86	28.15	27.86	28	0.004294924	0.43%
3/2/2017	27.52	27.91	27.52	27.88	0.00973156	0.97%
2/2/2017	27.36	27.69	27.2	27.61	0.008730503	0.87%
1/2/2017	27	27.4	26.88	27.37	0.016206616	1.62%
31-01-2017	26.99	27.17	26.25	26.93	-0.022398586	-2.24%
30-01-2017	27.7	27.98	27.37	27.54	-0.005070637	-0.51%
27-01-2017	27.8	28.08	27.56	27.68	0.007251663	0.73%
25-01-2017	27.2	27.73	27.19	27.48	0.014293811	1.43%
24-01-2017	26.8	27.2	26.71	27.09	0.017877571	1.79%
23-01-2017	26.5	26.8	26.25	26.61	0.020885513	2.09%
20-01-2017	26.9	26.99	25.55	26.06	-0.026506664	-2.65%
19-01-2017	27	27	26.6	26.76	0.008632067	0.86%
18-01-2017	26.99	27	26.3	26.53	0.001131435	0.11%
17-01-2017	26.8	27	26.37	26.5	-0.011257155	-1.13%
16-01-2017	30	30	26.5	26.8	-0.001863933	-0.19%
13-01-2017	26.79	26.96	26.75	26.85	0.004479291	0.45%
12/1/2017	26.69	26.85	26.25	26.73	0.005251325	0.53%
11/1/2017	26.3	26.69	26.3	26.59	0.014394188	1.44%
10/1/2017	26.45	26.49	26.04	26.21	0.001909491	0.19%
9/1/2017	26.6	26.6	26.05	26.16	-0.007236748	-0.72%
6/1/2017	26.4	26.69	26.33	26.35	0.00151918	0.15%
5/1/2017	26.08	26.4	26.08	26.31	0.013392203	1.34%
4/1/2017	26	26.15	25.8	25.96	0.001927897	0.19%
3/1/2017	25.48	25.98	25.48	25.91	0.027785	2.78%
2/1/2017	25.26	25.42	25.2	25.2	-0.002773927	-0.28%

Annual Volatility = 8.39%

Plg

ORIGINALITY REPORT

14%	8%	8%	10%
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