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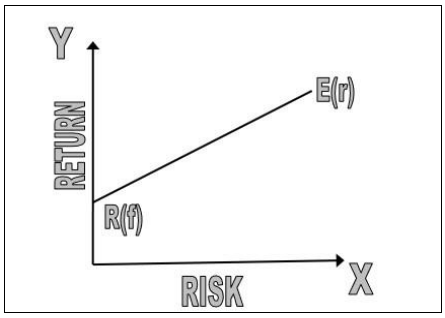
A study on performance of BSE stock market in India during the period of implementation phase of GST from June 1st to October 31st 2017

Ch. Brahma Teja[1], Dr. P Raja Babu[2], Gowsya Shaik[3]
[1] Scholar, KLBS, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Andhra Pradesh, India
[2] Associate Professor, KLBS, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Andhra Pradesh, India
[2] Research Scholar, KLBS, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Andhra Pradesh, India

Abstract
This article evaluates the Performance of BSE stocks after implementation of GST i.e., from July 1st 2017 to October 31st 2017. This study suggests the optimal portfolio to the investor in order to reduce the risk and increase the returns. CAPM (Capital Asset Pricing Model) model is used to evaluate the performance of the BSE stocks based on the Estimated and Expected returns. Weekly closing prices of different stocks are used to calculate the Expected returns. The performance of the individual stocks is evaluated on the basis of Beta, Alpha, Standard Deviation and Pricing decisions. The study resulted in stating that out of 30 stocks 5 stocks are under Priced. The main objectives of this study is to know the market returns of BSE Sensex after implementation of GST from 1st June 2017 to 31st October 2017, to analyze the investment decision and its related risk return with Capital Asset Pricing Model, to give appropriate suggestions for searching the optimal portfolio in order to reduce the risk and increasing the returns.

Keywords: BSE, stock market, GST

Introduction
Portfolio refers to maintain combination of various securities such as shares, debentures, etc. Portfolio management is the diversification of investments of various investors with a view to minimize the risk and maximize the returns. According to Sharpe 1964; Merton 1973 suggested a relation of positives' between risk and return. Investment is a financial activity which involves risk with a commitment of funds for a return expected to be realized in the future.
Investment can be made in financial assets or physical assets in either the case there is a possibility that the actual return may vary from the expected return and there is the possibility of risk involved in such investments. Investment is generally differentiated from speculation in terms of three factors namely risk, capital gain and time period. Gambling is the extreme form of speculation. Investors may be individual or institutions; there is large number of investment avenues for savers in India. These are Corporate securities, deposits in the banks and Non-Banking companies, mutual funds schemes, provident fund schemes, life insurance policies, government securities are some of the important avenues. Some of them are marketable and liquid, while others are non-marketable. Some of them are highly risky while some others are almost risk less. The investment characteristics are Return, Risk, Safety and liquidity. Generally, there is higher the risk, the return also higher. Hence, an investor generally prefers liquidity, safety, good return with minimum risk. From Sharpe 1984 the relation of positiveness between the amount of risk and the amount of expected return can be said as greater the risk the larger the expected return and also the chances of substantial loss.



- The line from 0 to R (f) is called the rate of return or risk less investments commonly associated with the yield on government securities.
- The diagonal line form R (f) to E(r) illustrates the concept of expected rate of return increasing as level of risk increases.

Review of Literature
Dr. G. Brindha (2013) article on Portfolio Management proposed a suggestion with a view to manage their portfolio in an effective way by using RSI (Relative strength Index) and ROC (Rate of Change) RSI Values which drawn the conclusion that above 70 are considered to denote overbought conditions and values below 30 are considered to denote oversold condition. When the RSI has crossed 30 lines from below to above and is rising, a buying opportunity is indicated. When it has crossed 70 line from above to below and is falling, selling signal is indicated.
Michael lubatkin extending modern portfolio theory into the domain of corporate diversification: Does It Apply? Stated

that diversification lowers a firm's unsystematic (business-specific) risk but does not affect its systematic (system wide) risk. The author tested each notion while controlling for other factors that influence risk. The findings show that the relationship between corporate diversification and both forms of stock return risk generates a U-shaped graph. Thus, an important way for corporations to minimize risk is to diversify into similar businesses rather than into identical or very different businesses.

Kenneth R. French, G. William Schwert, Robert F. Stambaugh (1987). In Expected Stock Returns And Volatility this paper examines the relation between stock returns and stock market volatility. It is found that the expected market risk premium (the expected return on a stock portfolio minus the Treasury bill yield) is positively related to the predictable volatility of stock returns. There is also evidence that unexpected stock market returns are negatively related to the unexpected change in the volatility of stock returns. This negative relation provides indirect evidence of a positive relation between expected risk premiums and volatility.

Edwin J. Elton and Martin J, Gruber (2004) Optimum Centralized Portfolio Construction with Decentralized Portfolio Management says that many financial institutions employ outside portfolio managers to manage part or all of their investable assets. It is well recognized that outside portfolio managers are unwilling to share security information with each other or with the centralized decision maker and this in general will lead lo sub- optimal portfolios. In this paper, we derive an implementable set of rules under which a central decision taker can take optimal decisions without requiring decentralized decision makers to reveal estimates of security returns, further more. We derive conditions under which these rules hold and when they do not hold.

Andy Fodor, Kevin Krieger, Nathan Mauck And Greg Stevenson (2013) Predicting Extreme Returns And Portfolio Management Implications we consider which readily observable characteristics of individual stocks may be used to forecast subsequent extreme price movements. We believe we are the first to explicitly consider the predictive influence of option implied volatility in such a framework, which we find to be an important indicator. However, after controlling for implied volatility levels, other factors, particularly firm age and size, continue to have additional predictive power of extreme returns. Furthermore, excluding predicted extreme return stocks leads to a portfolio that has lower risk (standard deviation of returns and lower beta) without sacrificing performance.

Objectives of the Study

1. To know the market returns of BSE Sensex after implementation of GST from 1st June 2017-31st October 2017
2. To analyze the investment decision and its related risk return with Capital Asset Pricing Model.
3. To give appropriate suggestions for searching the optimal portfolio in order to reduce the risk and increasing the returns

Data Collection

The required data for the analysis is weekly Closing Prices of the Stocks from June 1st 2017 to October 31st 2017 which is secondary data collected from the BSE Sensex site and the estimated return for the year and dividend per share is collected from the Balance sheets of the company.

Research Methodology

The analysis is put forward by the calculation of Expected Returns for the period of 6 months of a stock by the formula

$$\text{Expected Return} = \frac{\text{Today's Price} - \text{Yesterday's Price}}{\text{Yesterday's Price}}$$

For the measurement of return the average return of the stocks for the period of 6 months

$$\text{Average} = \frac{\text{Sum of Observed returns for the Period}}{\text{Number of Observations during the Period}}$$

The calculation of Beta which measures the volatility of the stock is measured by

$$\text{Beta} = \frac{\text{Covariance between Stock return and Market return}}{\text{Variance of Market return}}$$

The Alpha value is measured by the formula

Alpha = Individual Stock average – Beta * (Average Market return)

The analysis of the BSE stock Sensex is further done by Capital Asset Pricing Model which measures the Portfolio Return and Risk of the BSE Sensex Stocks for the date of the Period i.e., October 31st 2017. The outcome of this model gives the estimated return measured by

$$\text{Estimated Return} = \frac{(P1 - P0 + D)}{P0}$$

P1 = Estimated Price of the Stock during the period of One year

P0 = Current Market Price of the Stock D = Anticipated Dividend for the Year

Data Analysis

The table 1 shows the values of market returns, Beta, Alpha, and Standard Deviation of BSE Sensex after the implementation phase of GST. The study is from 1st JUNE 2017 to 31st October, 2017.

Table 1

	Average	Standard Dev		
BSE S&P SENSE	0.319212959	1.511077		
			BETA	ALPHA
ADANIPORTS	1.05329499	3.242942	1.890031315	0.449972501
ASIANPAINT	0.155944616	3.141332	1.279496793	-0.252487342
AXISBANK	-0.186217202	3.576416	0.345576736	-0.296529775
BAJAJ-AUTO	0.78709166	2.293816	0.767608065	0.542061218
BHARTIARTL	5.494397942	9.759967	1.538583325	5.003262206
CIPLA	4.653984515	0.870301	0.654300286	4.445123385
COALINDIA	-0.843958388	2.568229	0.495773958	-1.00221586
DRREDDY	2.437532425	0.831507	1.158518693	2.067718245
HDFC Finance	0.313412627	2.682615	0.467926938	0.164044285
HDFCBANK	-0.677439789	3.646762	0.52486121	-0.844982289
HEROMOTOCO	-2.768342247	1.957514	0.486861018	-2.923754594
HINDUNILVR	0.812680522	0.075909	1.303627186	0.39654583
ICICIBANK	6.033673845	6.865037	1.139770676	5.669844274
INFY	-0.238456235	2.697033	0.553645346	-0.415187004
ITC	-1.370560631	3.800123	1.002653351	-1.690620574
KOTAKBANK	-1.111900487	4.840328	0.321959645	-1.214674178
LT	3.522804352	5.57647	1.284342676	3.112825525
LUPIN	-3.047618631	3.757722	0.914277369	-3.339467816
M&M	2.528558392	2.773326	1.290725983	2.116541931
MARUTI	3.907594072	1.167947	0.837174566	3.640357102
NTPC	0.476619816	4.55039	0.900544583	0.189154314
ONGC	2.587829302	7.522604	0.66348859	2.376035145
POWERGRID	1.519886572	1.737837	0.31200269	1.42029127
RELIANCE	3.413797186	3.681317	1.928827721	2.798090381
SBIN	11.77782367	16.11508	2.556060097	10.96189617
SUNPHARMA	7.352349279	0.696057	2.200667539	6.649867681
TCS	-0.568050794	2.045121	0.584761464	-0.754714231
TATA MOTORS	-0.457034508	4.587451	2.281609394	-0.332867047
TATA STEEL	2.109690916	2.728272	0.404709525	1.980502391
WIPRO	0.436102676	3.474477	0.308729399	0.337552251

It is observed that out of 30 stocks after the implementation phase of GST the top 5 stocks performing in terms of high market return are observed as State Bank of India with 11.77 Sun Pharma with 7.35%, ICICI Bank with 6.03%, Bharti Airtel with 5.44% and Cipla with 4.65%.

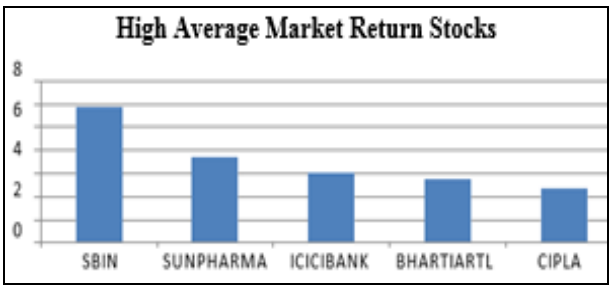


Fig 1: Shows the stocks of High Average Market Returns

The Stocks with Low average market returns are observed with Coal India with -0.84% Kotak
Bank with -1.11% ITC with -1.37%, Hero Motoco with -2.76% and Lupin with -3.04% Below
Figure 2 shows the Lower average market returns.

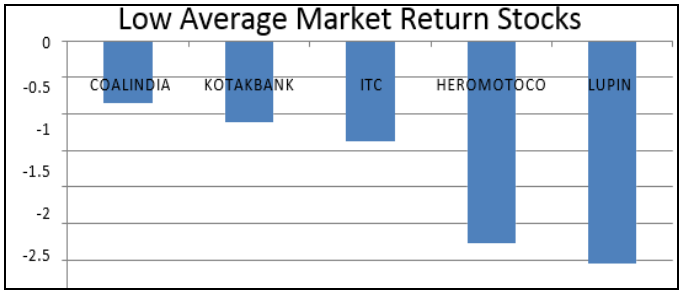


Fig 2

The less volatile stocks with reference to the market which can be measured by Beta are observed as Wipro with 0.30, Power Grid with 0.31, Kotak Bank with 0.32, Axis Bank with 0.34, Tata
Steel with 0.40 and high volatile stocks are observed as State Bank of India with 2.55, Tata
Motors with 2.28, Sun Pharma with 2.20, Reliance with 1.92 and Adani Ports with 1.82. Figure
2.1 & 2.2 shows the Low and High volatility Stocks.

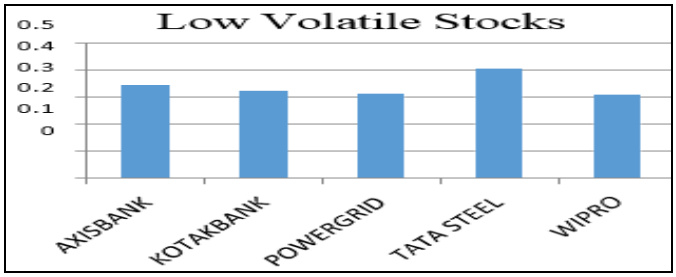


Fig 3

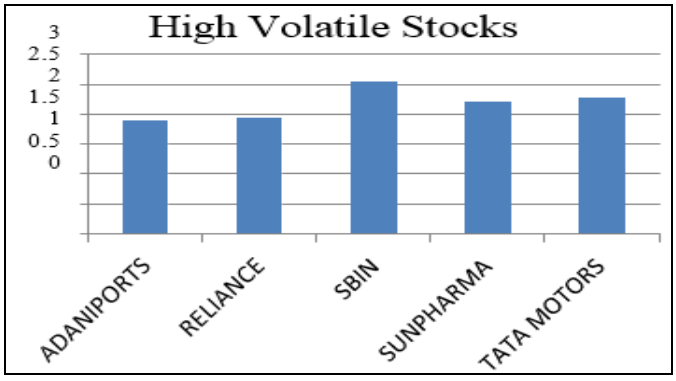


Fig 4

The Individual Stock Performance correlating with the BSE SENSEX market is ranked as below. The table 2 shows the Correlation values of the individual stock with the market of which Adani Ports ranks 1st with value of 0.88 Hindustan Uniliver ranks 2nd with the value of 0.80.

Table 2: Name of the company Correlation values with the Market Ranking

Adaniports	**0.880676399**	**1**
Asianpaint	0.615477009	9
Axisbank	0.146010144	29
Bajaj-auto	0.537069825	11
Bhartiartl	0.515453859	13

Cipla	0.377256494	17
Coalindia	0.206377966	28
Drreddy	0.294237265	22
Hdfc finance	0.263576179	23
Hdfcbank	0.408121051	15
Heromotoco	0.255156417	24
Hindunilvr	0.807019858	2
Icicibank	0.537058961	11
Infy	0.349443817	19
Itc	0.35683626	18
Kotakbank	0.228850762	25
Lt	0.703712979	6
Lupin	0.347442701	20
M&m	0.777034637	4
Maruti	0.586621285	10
Ntpc	0.437194232	14
Ongc	0.329833287	21
Powergrid	0.215887378	27
Reliance	0.793671676	3
Sbin	0.621307597	8
Sunpharma	0.669367561	7
Tcs	0.751547355	5
Tata motors	0.224151849	26
Tata steel	0.394287289	16
Wipro	0.134268782	30

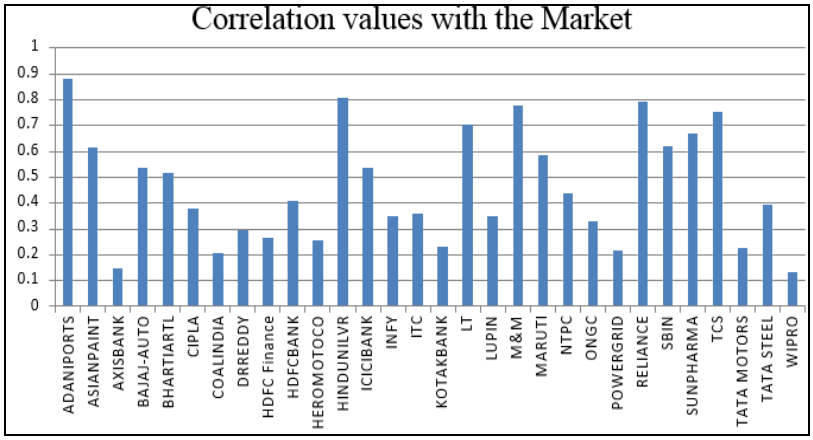


Fig 5: The Correlations values of stocks with Market

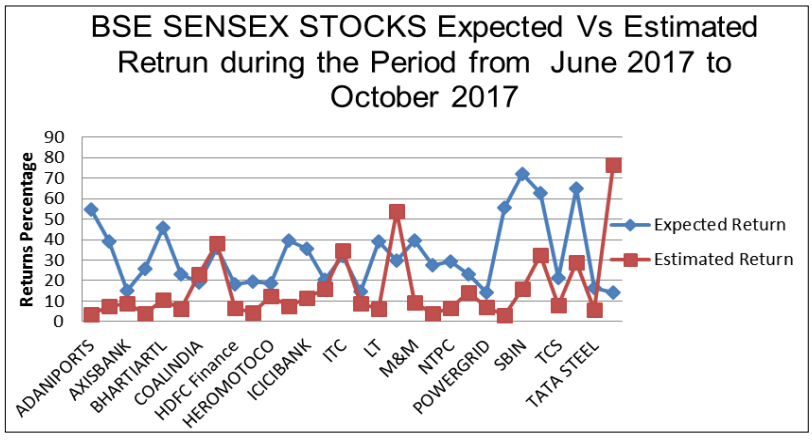


Fig 6

Calculation of CAPM Model

The table 3 shows the calculated values of Estimated Returns of the Stocks using the Capital Asset Pricing Model.

Table 3

	Closing Price of 31/10/2017	52WEEK Expected Price	Dividend	CAPM Calculation ofEstimated Return
ADANIPORTS	430.3	443.35	1.3	3.33488264
ASIANPAINT	1180.7	1261.25	10.3	7.694587956
AXISBANK	523.05	564.6	5	8.89972278
BAJAJ-AUTO	3260	3337.4	55	4.061349693
BHARTIARTL	497.65	548.5	1	10.41896916
CIPLA	625.7	663	2	6.280965319
COALINDIA	286.35	332.1	19.9	22.92648856
DRREDDY	2431.4	3345	20	38.39763099
HDFC Finance	1707.35	1804.5	18	6.74436993
HDFCBANK	1808.8	1876.95	11	4.375829279
HEROMOTOCO	3816.45	4200	85	12.27711617
HINDUNILVR	1236.85	1314.5	17	7.652504346
ICICIBANK	299.95	332.3	2.5	11.6186031
INFY	921.65	1045	25.75	16.17750773
ITC	266.1	353.2	4.75	34.51709884
KOTAKBANK	1024.55	1114.35	0.6	8.823385877
LT	1220.6	1274	21	6.095362936
LUPIN	1027.45	1572.25	7.5	53.75444061
M&M	1345	1459.5	13	9.479553903
MARUTI	8217	8455	75	3.809176098
NTPC	180.5	187.95	4.78	6.775623269
ONGC	191.1	212	6.05	14.1025641
POWERGRID	212.75	226.4	1	6.886016451
RELIANCE	940.8	958.2	11	3.018707483
SBIN	305.8	351.5	2.6	15.79463702
SUNPHARMA	553.4	730.75	3.5	32.67979761
TCS	2616.3	2774	47	7.824026297
TATA MOTORS	428.55	553	0	29.03978532
TATA STEEL	703.65	734.9	10	5.862289491
WIPRO	294	515	4	76.53061224

From the table 4 it can be observed that 5 stocks out of 30 i.e., Coal India, Dr. Reddy, ITC, Lupin and Wipro are underpriced remaining is overpriced during the period 1st June 2017 to 31st October 2017.

Table 4: Pictorial representation of underpriced and overpriced stocks

	Average(Rm) in terms of Percent	Standard Dev						
BSE S&P SENSEX	31.92	1.511076734					Risk Free Rate(182 Treasury Bill Interest rate in India from June 2017- October	6.18
			BETA	ALPHA	CAPM Calculation of expected return	CAPM Calculation of Estimated Return		
ADANIPORTS	1.05329499	3.242941846	1.890031315	0.449973	**54.82940605**	**3.33488264**	Over Price	
ASIANPAINT	0.155944616	3.141332342	1.279496793	-0.25249	**39.11424746**	**7.694587956**	Over Price	
AXISBANK	-0.186217202	3.576415649	0.345576736	-0.29653	**15.07514518**	**8.89972278**	Over Price	
BAJAJ-AUTO	0.78709166	2.293815941	0.767608065	0.542061	**25.93823159**	**4.061349693**	Over Price	
BHARTIARTL	5.494397942	9.759967001	1.538583325	5.003262	**45.78313479**	**10.41896916**	Over Price	
CIPLA	4.653984515	0.870300884	0.654300286	4.445123	**23.02168937**	**6.280965319**	Over Price	
COALINDIA	-0.843958388	2.568228588	0.495773958	-1.00222	**18.94122169**	**22.92648856**	Under Price	
DRREDDY	2.437532425	0.831506651	1.158518693	2.067718	**36.00027116**	**38.39763099**	Under Price	
HDFC Finance	0.313412627	2.682615366	0.467926938	0.164044	**18.22443938**	**6.74436993**	Over Price	
HDFCBANK	-0.677439789	3.646762093	0.52486121	-0.84498	**19.68992754**	**4.375829279**	Over Price	
HEROMOTOCO	-2.768842247	1.957513576	0.486861018	-2.92375	**18.71180262**	**12.27711617**	Over Price	
HINDUNILVR	0.812680522	0.075909282	1.303627186	0.396546	**39.73536376**	**7.652504346**	Over Price	
ICICIBANK	6.033673845	6.865037211	1.139770676	5.669844	**35.51769719**	**11.6186031**	Over Price	
INFY	-0.238456235	2.697032838	0.553645346	-0.41519	**20.43083121**	**16.17750773**	Over Price	
ITC	-1.370560631	3.800122671	1.002653351	-1.69062	**31.98829725**	**34.51709884**	Under Price	
KOTAKBANK	-1.111900487	4.840327638	0.321959645	-1.21467	**14.46724127**	**8.823385877**	Over Price	
LT	3.522804352	5.576469836	1.284342676	3.112826	**39.23898048**	**6.095362936**	Over Price	
LUPIN	-3.047618631	3.757722372	0.914277369	-3.33947	**29.71349947**	**53.75444061**	Under Price	
M&M	2.528558392	2.773325838	1.290725983	2.116542	**39.40328681**	**9.479553903**	Over Price	
MARUTI	3.907594072	1.167947256	0.837174566	3.640357	**27.72887333**	**3.809176098**	Over Price	
NTPC	0.476619816	4.550389822	0.900544583	0.189154	**29.36001758**	**6.775623269**	Over Price	
ONGC	2.587829302	7.522603802	0.66348859	2.376085	**23.25819631**	**14.1025641**	Over Price	
POWERGRID	1.519886572	1.737837055	0.31200269	1.420291	**14.21094923**	**6.886016451**	Over Price	
RELIANCE	3.413797186	3.681317124	1.928827721	2.79809	**55.82802555**	**3.018707483**	Over Price	
SBIN	11.77782367	16.1150793	2.556060097	10.9619	**71.97298688**	**15.79463702**	Over Price	
SUNPHARMA	7.352349279	0.696056782	2.200667539	6.649868	**62.82518247**	**32.67979761**	Over Price	
TCS	-0.568050794	2.045120613	0.584761464	-0.75471	**21.23176008**	**7.824026297**	Over Price	
TATA MOTORS	-0.457034508	4.587451273	2.281609394	-0.33287	**64.90862581**	**29.03978532**	Over Price	
TATA STEEL	2.109690916	2.7282717	0.404709525	1.980502	**16.59722317**	**5.862289491**	Over Price	
WIPRO	0.436102676	3.474477129	0.308729399	0.337552	**14.12669472**	**76.53061224**	Under Price	

Findings

From the above analysis of stocks it is found that investment in the stocks of various sectors, like Banking Sector stocks in State Bank of India and ICICI bank yielded with 11.7% and 6.03% respectively, Pharmaceuticals sector stocks like Sun Pharma and Cipla with 7.35% and 4.65% and Bharti Airtel with 5.44% from the period of June 1st to October 31st after the implementation Phase of GST. The volatility of stocks can be less observed with Wipro, Power Grid, Kotak Bank, Axis Bank and Tata Steel. The higher performance stocks with respect to the Market are observed as Adani Ports with 0.88% and Hindustan Uniliver with 0.80. The better understanding of stocks which is explained from the return and risk calculation of the Capital Asset Pricing model brought the conclusion that out of 30 stocks like Coal India, Dr. Reddy, ITC, Lupin and Wipro suits the investors to make the decision of buying.

Suggestions

It may be suggested that investing in equity funds at the early stage of human life cycle suits the best returns and meets the objective of Investment. The debt funds suits for the investors who need the investment as a regular Income. It is therefore, based on availability of funds an investor to make optimal portfolio.

Conclusion

The Performance of the stocks during the period from June 1st to 31st October 2017 i.e., implementation phase of GST is studied which brought the overview of the BSE Sensex stocks to the investors from the market trend during the six months of the Period. In addition to it this study also put forward by the Capital Asset Pricing Model from which the investors can aware of stocks and by takes investment decision of stocks that are resulted in underpriced from the calculated model of CAPM.

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