

A PRACTICAL STUDY ON SELECTION OF STOCKS AMONG NATIONALISED BANK

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Abstract

The Indian investment scene has many alternatives to offer to an investor. At present, a wide variety of investment avenues are open to the investors to suit their needs and nature. Knowledge about the different avenues enables the investor to choose investment intelligently. The required level of return and the risk tolerance level decide the choice of the investor.

Once again the Indian stock markets are at their all time high levels. Buying Public Sector banks stocks at this point in time can be most rewarding if all the things fall in place as perceived by the markets. There can be huge gains in these stocks. Present paper aims at to guide an investor to select among various public sector bank stocks using different evaluation criteria respectively supported with practical study.

Keywords

Stock Market, Public Sector Banks, Investment, Efficient Frontier Theory, Sharpe's Optimal Portfolio.

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Introduction.

Investment means employment of funds with the objective of realizing additional income or growth in value at a future date. Most investors are risk averse but they expect maximum return from their investment. Every investment must be analysed because there is definitely some risk in it.

The lure of big money has always thrown investors into the lap of stock market. However, making money in equities is not so easy. It not only requires patience and discipline but also a great deal of research and understanding of the market. The investor who put in money systematically, in the right shares and have patience can generate outstanding returns from their investment.

Here a practical analysis has been done with the examples of nationalised banks and their present performance for last 5 Years on quarterly basis.

Investing in Public Sector Banks.

In India there are 26 public sector banks, 20 private sector banks, 43 foreign banks, apart from co-operative banks. The stocks of public sector banks have fallen the most even after the smart recovery seen in the broader indices that have now just surpassed their life-time highs. The sub-par economic growth, that has just now been halved to below 5% from nearly double digit growth, is said to be the key reason for the rise in bad assets and under performance of the public sector banks.

Despite the anticipated weakness in earnings in the March quarter, shares of state-owned banks have out performed the broader markets. The 12-share PSU bank index on national stock exchange has risen 16.47% since January, more than double the 7.59% rise in Nifty index, as investors bought these stocks expecting a pick up in the economy and an easing of the bad loan build up in banking after the new government takes charge.

Table 1: Comparison of profit book value ratio

	High P/BV in the last boom period (between 11 th Sept 2007 to 11 th Jan 2008)	Average P/BV (Between 9 th March 2009 to 10 th April 2014)	Current P/BV
Nifty	6.55	3.26	3.28
Bank Index	4.67	2.28	2.28
PSU Bank Index	2.79	1.46	1.05

Source: www.economicstimes.indiatimes.com

The above table clearly suggests that public sector banks are attractively priced at the current P/BV of 1.05. During the boom period of 2007 to 2008, when the Indian stock market was trading at its all time high level, the PSU bank index was trading at P/BV of 2.79 in comparison to broader indices nifty which traded at P/BV of 6.55 and bank index at 4.67%.

Objectives of the study:

The risk adverse nature of the investors makes him to think twice before investing in any of the investment alternatives. Considering this, present paper highlights following objectives.

- To highlight on basic financial concepts
- To understand the nature of fluctuations in Indian public sector banks
- To guide an investor to determine the return and risk expected from an investment.
- To select securities by using various financial tools
- To find out the most attractive combination of investment in public sector banks using Sharpe's Optimal Portfolio Model.

Methodology:

Sources of Data

Primary Data: This study is mainly based on Primary data. Primary data is collected from share price of 19 public sector banks and their capital market performance for last 5 years is recorded on the basis of each quarter end market price.

Secondary Data:

Secondary data also utilized for basic conceptual framework. Information is collected from the various sources like reputed journals, published books, research works and web sites.

Tools for analysis

Basically this paper deals with guiding an investor in respect of attractive investment plans. Different financial tools have been utilized to guide the investor in selecting the securities. The concept of expected return, standard deviation, beta, efficient frontier, optimal portfolio, capital asset pricing model, different performance appraisal techniques like Sharpe's model, Treynor's model, Jensen's model and Sharpe's Optimal Portfolio model are used. Final conclusion and interpretation has been drawn from the results of the study.

Findings of the study:

Investing in share market is a personal choice. There is no particular strategy for anyone in respect of selection of scrip. This paper helps one to analyse what kind of investor he is and which scrip holds him well according to his needs and goals in investing in the share market.

Table 2: Evaluation Criteria for selection of securities

1	2	3	4	5	8	9	10	11	12	13
SL. NO	Bank Name	Mean Return (R _i)	S.D σ	Beta β	Sharp e's	Ran k	Treyno r's	Rank	Jensen	Rank
1	Allahabad Bank	10.57	37.9	1.99	0.23	3	4.29	2	3.42	1
2	Andhra Bank	4.86	26.83	1.82	0.11	8	1.55	11	-1.86	Neg
3	Bank of Baroda	7.91	25.11	1.89	0.23	3	3.11	4	1.01	4
4	Bank of India	3.51	26.91	1.71	0.05	9	0.86	16	-2.92	Neg
5	Bank of Maharashtra	5.53	26.02	1.92	0.13	7	1.82	10	-1.44	Neg
6	Canara Bank	9.24	22.14	1.52	0.33	1	4.74	1	3.29	2
7	Central Bank of India	9.19	44.69	3.58	0.18	5	2.20	8	-1.33	Neg
8	Corporation Bank	5.20	29.02	2.22	0.11	8	1.42	13	-2.55	Neg
9	Dena Bank	7.56	31.05	2.02	0.18	5	2.73	7	0.33	7
10	Indian Bank	5.83	30.02	1.84	0.13	7	2.06	9	-0.94	Neg
11	Indian	4.01	28.2	2.17	0.07	8	0.91	15	-3.61	Neg

	overseas Bank									
12	Oriental Bank of Commerce	7.18	26.83	1.75	0.19	4	2.94	5	0.64	5
13	Punjab National Bank	4.60	22.52	1.68	0.11	8	1.52	12	-1.76	Neg
14	Syndicate Bank	6.42	24.91	1.5	0.18	5	2.92	6	0.52	6
15	UCO Bank	9.61	27.53	1.91	0.27	2	3.96	3	2.66	3
16	Union bank of India	2.51	24.46	1.54	0.02	10	0.31	17	-3.49	Neg
17	United Bank of India	-1.56	26.45	0.82	-0.14	Neg	-4.39	Negati ve	-5.71	Neg
18	Vijaya bank	5.72	27.17	3.37	0.14	6	1.09	14	-4.98	Neg
19	Punjab Sind Bank	-9.21	18.33	-0.007	-0.61	Neg	1607.14		-11.23	Neg

Source: Author's Primary Data

Interpretation:

Evaluation on the basis of Average Return (R_i)

Investors always expect a good rate of return from their investment. Scrip which yields maximum rate of return will be selected by an investor. Average rate of return can be calculated as follows,

$$\text{Return} = (((\text{closing price} - \text{opening price}) / \text{opening price}) * 100)$$

$$\text{Average Return} = (\sum \text{Return} / N)$$

Where N = Number of observation.

Above table 2, column 3, gives average expected return of selected public sector banks. From the close observation it is clear that, if an investor chooses the scrip on the basis of average return, he can select Allahabad Bank (10.57%), then UCO Bank (9.61%) and then he would prefer Canara Bank (9.24%).

Evaluation on the basis of Standard Deviation

Investment decision will be more accurate if an investor considers risk along with returns. Investor in general would like to analyse the risk and thorough knowledge of the risk helps him to minimise the risk. The standard deviation represents the variation in the expected return. Higher the standard deviation higher will be the variation in expected return and vice-versa. One can select the scrip which yields very minimum variance for investment.

$$\text{Variance} = (\text{Standard Deviation})^2 = \sum_{i=1}^N (\text{Return} - \text{Average Return})^2$$

It is clear from the above table 2, column 4, Punjab Sind Bank, Canara Bank and Punjab National Bank has 18.33, 22.14, 22.52 percentage of variation respectively in relation with their expected return. However, Punjab Sind Bank has negative returns. If an investor is risk averse, he can select Canara Bank and Punjab National Bank.

Evaluation on the basis of beta concept:

Movement in the share market affects individual company's share price. Beta indicates one percent change in NSE index return (Nifty) will cause some percent of change in the stock return.

Beta is a measure of volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. A beta of 1 indicates that as security price will move with market. A beta of less than one means that the security will be less volatile than the market. A beta of greater than one indicates that the security's price will be more volatile than the market.

$$\beta = \{ [\sum (R_i - \bar{R}_i) * (R_m - \bar{R}_m)] / \sum (R_m - \bar{R}_m)^2 \}$$

Where,

- R_m means market return.
- \bar{R}_m means average market return
- R_i means return of individual security
- \bar{R}_i means average return of individual security

There are three types of investor would be found, categorised as risk averse, risk neutral and risk lover. Risk averse investor always interested in avoiding risk to maximum extent. He can go for scrip with less beta value like United Bank of India ($\beta = 0.82$) as it is less volatile than the market.

Risk neutral investor has the indifference view on risk nature of any scrip and he always ready to move hand by hand with market. He would be preferred for scrip with beta value nearer to 1.

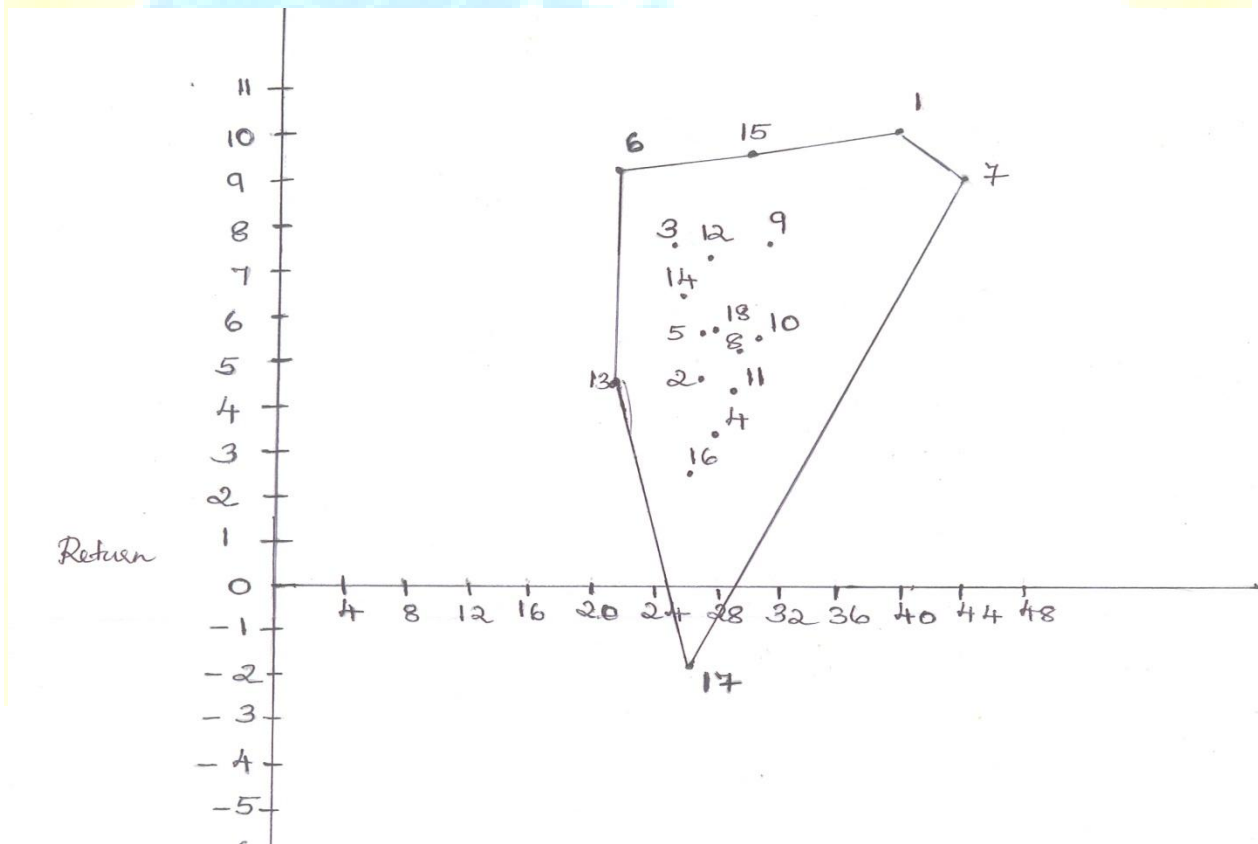
This could be met with United Bank of India and Syndicate bank which is having beta of 0.82 and 1.5 respectively.

Risk lover always ready to take higher risk with the expectation of maximum return, A risk taker can invest in Central Bank of India, Vijaya Bank, Corporation Bank as these are more volatile than the market.

The technique of Efficient Frontier:

Efficient frontier is a set of optimal portfolios that offers the highest expected return for a defined level of risk or the lower risk for a given level of expected return. Portfolios that lie below the efficient frontier are sub-optimal, because they do not provide enough return for the level of risk. Portfolios that cluster to the right of the efficient frontier are also sub-optimal, because they have a higher level of risk for the defined rate of return.

Graph 1: Efficient Frontier



(Source: Author’s primary source)

In the above graphical representation OX axis denotes standard deviation and OY axis represents percentage of return. Risk returns space formed by the graph, shows possible selection of stocks and their relative risk.

There would be three types of investors found named as risk taker, risk neutral and risk avoider. Risk taker's expectation is always very high and he is ready to take higher level of risk since above space which is created by risk-return factor, point 1 i.e., Allahabad bank to be selected to reach is expectation.

Risk neutral not more conscious on risk and return and he looks for medium coverage in both side. To achieve this medium expectation better solution is UCO bank (Point 15) since it has got average return with affordable risk.

Finally risk avoider who always tries to make is risk very minimum and return would not be the matter. Point 6 i.e., Canara bank has here very less amount of risk compare to other securities in efficient portfolio.

Efficient frontier gives the clear structure in selection of securities on the basis of their dominance over neighbours. It is to be noted in above graphical representation that point 6,15 and 1 dominates and on the basis risk affordability any securities can be selected.

Evaluation on the basis of performance appraisal

Performance appraisal helps an investor to understand how well the portfolio has performed. Some of the techniques for performance evaluations are;

Sharpe's Model

Sharpe's performance index gives a single value to be used for the performance ranking of various funds or portfolios. Sharpe index measures the risk premium of the portfolio relative to the total amount of the risk in the portfolio. This risk premium is the difference between portfolios average rate of return and the riskless rate of return. The standard deviation of the portfolio indicates the risk. Sharpe's Model for individual company:

$$\text{Sharpe's risk return ratio} = [(R_t - R_f) / \sigma_p]$$

In table 2, column 7 and 8 gives details of Sharpe's performance model. This can be seen Canara bank is ranked as a better fund because its index is 0.33. UCO Bank and Allahabad Bank are ranked second and third.

Treynor's Model:

Standard Deviation alone cannot judge the effectiveness of performance for any scrip. Since some portion of risk completely eliminated through the market diversification, it need not to be consider avoidable risk. Treynor developed model considering Beta or systematic risk for return ratio. The index assigned the highest value to the asset that have best risk adjusted rate of return. In table 2, column 10 and 11 shows pre requisites of this model.

$$\text{Treynor's beta return ratio for company} = [(R_t - R_f) / \beta_p]$$

Canara Bank and Allahabad Bank is more desirable because it earned more risk premium per unit of systematic risk.

Jensen's Model

According to Jensen's Model the performance of the portfolio i.e., average return of portfolio is to be compared with the CAPM return. It is because any professional fund manager would be expected to earn atleast average portfolio return of CAPM. Therefore the performance of the fund is compared with the return generated with the model (column 11 and 12). The formula to calculate Jensen's performance model is:

$$\text{Jensen's ratio for company} = \{ R_t - [R_f + \beta [(R_m - R_f)] \}$$

Note: where R_t means average return of individual company

Jensen's Model tries to evaluate best option on the basis of additional return than minimum expected for CAPM. Allahabad Bank can be selected for the investment.

The Capital Asset Pricing Model:

The Capital Asset Pricing Model is used to determine a theoretically appropriate required rate of return of an asset having a linear relationship with assets beta value i.e. systematic risk. According to CAPM, all investors hold only the market portfolio and riskless securities. This model describes the minimum required return for the present level risk, later this can be compared with actual return for interpretation.

$$\text{Difference} = \{ R_i - [R_f + \beta (R_m - R_f)] \}$$

Note : Where R_f means risk free rate of return i.e., return given by government T- bills.

R_i means actual average return

Table 3: Capital Asset Pricing Model

<u>Serial No</u>	<u>Name of the Bank</u>	<u>% of Return</u>	<u>Beta</u>	<u>CAPM expected return</u>	<u>Excess % of variation</u>	<u>Ranking</u>
1	Allahabad Bank	10.57	1.99	7.15	47.74	2
2	Andhra Bank	4.86	1.82	6.72	-27.65	Neg
3	Bank of Baroda	7.91	1.89	6.90	14.68	4
4	Bank of India	3.51	1.71	6.43	-45.45	Neg
5	Bank of Maharashtra	5.53	1.92	6.97	-20.71	Neg
6	Canara Bank	9.24	1.52	5.95	55.39	1
7	Central Bank of India	9.91	3.58	11.24	-11.84	Neg
8	Corporation Bank	5.2	2.22	7.75	-32.86	Neg
9	Dena Bank	7.56	2.02	7.23	4.54	7
10	Indian Bank	5.83	1.84	6.77	-13.87	Neg
11	Indian Overseas Bank	4.01	2.17	7.62	-47.35	Neg
12	Oreintal Bank of Commerce	7.18	1.75	6.54	9.83	5
13	Punjab National Bank	4.6	1.68	6.36	-27.65	Neg
14	Syndicate Bank	6.42	1.5	5.90	8.91	6
15	UCO Bank	9.61	1.91	6.95	38.30	3
16	Union Bank of India	2.51	1.54	6.00	-58.15	Neg
17	United Bank of india	-1.56	0.82	4.15	-137.61	Neg

Source: Source: Author's Primary Data

Table 3 presents details of CAPM for selected public sector banks. Comparison of expected return with required return is interpreted in last two columns. Canara Bank and Allahabad Bank would be selected to get return over its minimum requirement for CAPM.

Sharpe's Optimal Portfolio:

It is well known fact that investing in group of securities yield maximum instead of having investment alone in any of the securities. Sharpe provided basic rule to select group of scrip from

available large number of securities, named. Authors made an attempt to evaluate portfolio concept of investment with same example.

Sharpe had provided a model for the selection of appropriate securities in a portfolio. The selection of any stock is directly related to its excess return-beta ratio.

$$(R_i - R_f) / \beta_i$$

Where, R_i = The expected return on stock i .

R_f = The return on a riskless asset

β_i = The expected change in the rate of return on stock i associated with one unit change in the market return.

The excess return is the difference between the expected return on the stock and the riskless rate of interest such as the rate offered on the government security or Treasury bill. The excess return to beta ratio measures the additional return on a security (excess of the riskless asset return) per unit of systematic risk or non-diversifiable risk. This ratio provides a relationship between potential risk and reward.

Ranking of the stocks are done on the basis of their excess return to beta. Portfolio managers would like to include stocks with the higher ratios. The selection of the stocks depends on a unique cut-off rate such that all stocks with higher ratio of $(R_i - R_f) / \beta_i$ are included and the stocks with lower ratios are left off. The cut-off point is denoted by C^* .

The steps for finding out the stocks to be included in the optimal portfolio are given bellow.

1. Finding the “excess return to beta” ratio for each stock under consideration.
2. Ranking them from the highest to lowest.
3. Calculating C_i for all the stocks according to the ranked order using the following formula.

$$C_i = [\sigma_m^2 \sum_{i=1}^n (R_i - R_f) / \beta_i] / [1 + \sigma_m^2 \sum_{i=1}^n \beta_i^2 / \sigma_{ei}^2]$$

Where: σ_m^2 = Variance of the Market

σ_{ei}^2 = variance of a stock's movement that is not associated with the movement of market index i.e. stock's unsystematic risk.

4. The cumulative of C_i start declaiming after a particular C_i and that point is taken as the cut-off point and that stock ratio is the cut-off ratio C^* .
5. Deciding the proportion of investment in each security, which is selected in step 4.

$$X_i = [Z_i / \sum_{i=1}^N Z_i]$$

Where:

$$Z_i = \{ \beta_i / \sigma_{ei}^2 [(R_i - R_f) \beta_i] - C^* \}$$

X_i = proportion of investment in i^{th} security.

C^* = cut of ratio.

Note:

- a. 'R_i' means return on each security and calculated on the basis of [(closing price – opening price) / opening price]*100.
- b. 'R_m' represents market return it can be calculated with market index either “Sensex or Nifty”. [(closing index price – opening index price) / opening index price]*100.
- c. 'R_f' it means risk free rate of return or return on government bill (T-bill). Standard T-Bill return issued by government on three month basis is 2.04%

Table 4: Sharpe's Optimal portfolio, Ranking the security on the basis of "excess return to beta"

No.	Bank Name	Average Return	Ri-Rf	Beta	Unsystematic Risk	Excess Return To Beta	Ranking
1	Allahabad Bank	10.57	8.53	1.99	886.33	4.29	2
2	Andhra Bank	4.86	2.82	1.82	259.76	1.55	11
3	Bank of Baroda	7.91	5.87	1.89	134.2	3.11	4
4	Bank of India	3.51	1.47	1.71	318.5	0.86	16
5	Bank of Maharashtra	5.53	3.49	1.92	165.93	1.82	10
6	Canara Bank	9.24	7.2	1.52	214.03	4.74	1
7	Central Bank of India	9.91	7.87	3.58	218.31	2.20	8
8	Corporation Bank	5.2	3.16	2.22	158.72	1.42	13
9	Dena Bank	7.56	5.52	2.02	395.68	2.73	7

10	Indian Bank	5.83	3.79	1.84	428	2.06	9
11	Indian Overseas Bank	4.01	1.97	2.17	137.2	0.91	15
12	Oreintal Bank of Commerce	7.18	5.14	1.75	349.12	2.94	5
13	Punjab National Bank	4.6	2.56	1.68	115.8	1.52	12
14	Syndicate Bank	6.42	4.38	1.5	305.64	2.92	6
15	UCO Bank	9.61	7.57	1.91	247.96	3.96	3
16	Union Bank of India	2.51	0.47	1.54	268.54	0.31	17
17	United Bank of india	-1.56	-3.6	0.82	607.04	-4.39	Negative
18	Vijaya Bank	5.72	3.68	3.37	-2208.46	1.09	14
19	Punjab and Sind Bank	-9.21	-11.3	0.007	335.95	1607.14	Negative

Source: Source: Author's Primary Data

Table 4, depicts the information of return to beta ratio, used to decide the superior order in optimal portfolio. In construction of optimal portfolio, rearrangement of above information should be done on the basis of their superiority in ranking.

Table 5: Deciding about securities which to be involved in Portfolio

S.No	Bank Name	Excess Return To Beta	Ri	Excess Return(Ri-Rf)	Beta	U S R	((Ri - Rf)/Beta)	((Ri - Rf)*beta)/USR	(Beta ² /USR)	C.total	C.total	Cut Off Point
1	Canara Bank	4.74	9.24	7.2	1.52	214.03	4.74	0.05	0.01	0.0511	0.0108	2.843
2	Allahabad Bank	4.29	10.6	8.53	1.99	886.33	4.29	0.02	0	0.0703	0.0153	3.131
3	UCO bank	3.96	9.61	7.57	1.91	247.96	3.96	0.06	0.01	0.1286	0.03	3.460
4	Bank of Baroda	3.11	7.91	5.87	1.89	134.2	3.11	0.08	0.03	0.2113	0.0566	3.312
5	Oriental Bank of commerce	2.94	7.18	5.14	1.75	349.12	2.94	0.03	0.01	0.237	0.0654	3.267
6	syndicate	2.92	6.42	4.38	1.5	305.64	2.92	0.02	0.01	0.2585	0.0727	3.235

		Bank											
7	9	Dena	2.73	7.56	5.52	2.02	395.68	2.73	0.03	0.01	0.2867	0.083	3.178
8	7	Central Bank of India	2.2	9.91	7.87	3.58	218.31	2.20	0.13	0.06	0.4158	0.1417	2.792
9	18	Indian Bank	2.06	5.83	3.79	1.84	428	2.06	0.02	0.01	0.4321	0.1497	2.755
10	5	Bank of India	1.82	5.53	3.49	1.92	165.93	1.82	0.04	0.02	0.4724	0.1719	2.638
11	2	Andhra Bank	1.55	4.86	2.82	1.82	259.76	1.55	0.02	0.01	0.4922	0.1846	2.566
12	13	PNB	1.52	4.6	2.56	1.68	115.8	1.52	0.04	0.02	0.5293	0.209	2.449
13	8	Corporation Bank	1.42	5.2	3.16	2.22	158.72	1.42	0.04	0.03	0.5735	0.24	2.320
14	18	Vijaya Bank	1.09	5.72	3.68	3.37	-2208	1.09	-0.01	-0.01	0.5679	0.2349	2.346
15	11	Indian Overseas Bank	0.91	4.01	1.97	2.17	137.20	0.91	0.03	0.03	0.5991	0.2692	2.167
16	4	Bank of India	0.86	3.51	1.47	1.71	318.50	0.86	0.01	0.01			
17	16	Union Bank	0.31	2.51	0.47	1.54	268.54	0.31	0	0.01			

(Source: Author's primary data *,

Note: (* all the calculations in the study done in MS-Excel.)

Table 5 depicts the necessary information for selection of securities in optimal portfolio. It should be noted in last column, value of numbers start to decrease in one particular value, it is known as cut off point and securities should be selected not below that point.

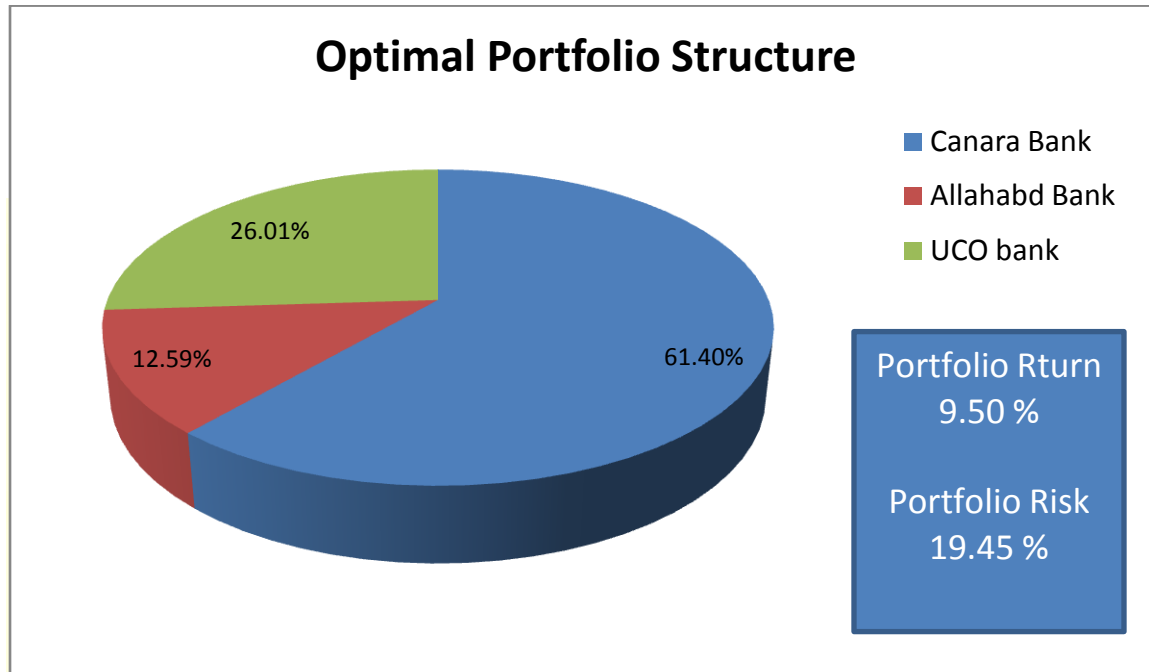
Table 6: The Optimal Portfolio Consist of securities of Canara Bank, Allahabad and UCO Bank.

Table 3: The Optimal Portfolio Consist of securities of CanaraBank, Alahabad and UCO Bank.

<u>S.No</u>	<u>Bank Name</u>	<u>Proportion Of Investment</u>	<u>Return</u>	<u>Risk</u>
8	Canara Bank	61.4	9.24	34.83
5	Allahabad Bank	12.59	10.57	37.9
4	UCO bank	26.01	9.61	27.53
Portfolio Return =		9.50%		
Portfolio Risk =		19.45%		

Source: Source: Author's Primary Data

Pie Chart: Optimal Portfolio



Source: Source: Author's Primary Data

After applying Sharpe's optimal strategy following three securities has dominated are shown bellow in table 6. Here it suggests that one should have his investment proportionately in Canara bank, Allahabad bank and UCO bank. The respective proportion for allocation of total fund and possible portfolio return and risk is even shown in pie chart also. Attractive return of 9.50 percentage with 19.45 percentage of standard deviation is expected with following proportion which could not be done with any other combination.

Limitations of the study:

1. Study is conducted only on the basis of last five year's quarter end share's market price. Study on fundamental analysis is totally ignored.
2. Do not put all eggs in the same basket. Unsystematic risk can be avoided by professional diversification, but portfolio concept has not been considered in the study.
3. Study is purely based on past performance of share. Future result cannot be entirely based on past performance of the share.
4. The study is limited only to 19 nationalised banks.

Conclusion:

The lure for big money has always thrown investors in the lap of stock markets. However making money through equity is not easy. It not only requires oodles of patience and discipline, but also a great deal of research and understanding of markets. Added this is the fact that stock market volatility in the last few years has left investors in a state of confusion. They are in a dilemma whether to invest, hold or sell in such a scenario. Although no sure- shot formula has yet been discovered for success in stock markets, the present study may help one to increase the chances of getting a good return.

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