Struggle for Individual Identity in Adiga's *The White Tiger*

Ambedkar Bodigadla, Research Scholar[1], Dr. Apsara Stanley[2], Assistant Professor

1, 2 Department of English and Foreign Languages, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad.

Abstract : *Identity in general describes a person's conception and expression of his individuality or group affiliations including national and cultural identity. A person's psychological identity relates to his self-image, self-esteem and individuality. In cognitive psychology, the term 'identity' refers to the capacity for self-reflection. The present research paper explores identity crisis, racial discrimination, individual and political corruption as portrayed in Adiga's debut novel The White Tiger. This depicts the vulnerable and dangerous conditions in Indian village systems and administration. The common people struggle a lot for their individual identity. The search for identity is one of the major themes in the novel. People struggle a lot to establish their identity.*

Key words: *individual and collective identity, ethnicity, corruption, struggles, racial discrimination.*

Narration

Aravind Adiga was born on October 23, 1974 in Chennai. He has an excellent track record in education. He was the topper of SSLC, Karnataka. He was the recipient of Booker prize for his first novel *The White Tiger* in 2008. He has written three novels -- *The White Tiger* (2008), *Between the Assassinations* (2008) and *Last Man in the Tower* (2011). Adiga received Booker Prize for his debut novel *The White Tiger* in 2008. This depicts the vulnerable and dangerous conditions in Indian village systems and administration. *Between the Assassinations* deals with the caste, religion dominated stories and also assassination of former Prime Minister Indira Gandhi whereas *Last Man in Tower* deals with the story of the struggle for real estate in Mumbai.

In *The White Tiger* Aravind Adiga explores the most heart-rending picture of imbalanced societies in India. It refers to the social and cultural issues of marginal tribes in the early free Indian villages. The novel steadily criticizes both the positive and negative developments in the places such as Laxmangarh and Dhanbad where the end of imperial rule meant new possibilities of cultural self-determination.

It is common to find unpleasant, down trodden people in the highly developed cities like Delhi and Bangalore. Both are metro cities and became power centers. Corruption is limitless in India and the corrupted people turns to Delhi to wipe away their sins by giving bribes to the administrative leaders. Poor people suffer for their daily bread and butter. In the present context marginality is used to analyze socio-economic, cultural spheres where deprived people struggle to gain access to resources and complete participation in the social life. Marginalized people are always discriminated, ignored and often suppressed on the basis of catse, colour, creed, culture, gender, religion, ethnicity, occupation, education and economy. In this novel, we can see the paralyzed part of society struggles for individual and collective identity.

Aravind Adiga's novel *The White Tiger* explores the struggle for individual identity. The narrator of this story comes from a nameless and birthday-less past with a written fate and addresses his agenda to China's Premier. Narrator Balaram becomes something not only as Indian but also as a part of global society under the symbolic pseudonym of 'The White Tiger'. It is wonder that Balaram appeals to China and speaks with understanding of the United States and world economies. Despite the lack of formal education, he knows multiple religions and languages. Balaram used to serve as a tools sweeper at hotel and worked as a car driver to a rich family. He observed the society and struggled for individual identity. Individual's free will is not just an action here, but a state of being and the ability to change what one's being is defined.

Balaram was not given a name nor knows his exact age. He has always been called "Munnna" or" boy", which his teacher claims is not a real name and subsequently named him Balaram. The teacher challenges the notion that we are born into identities by labelling Munna with the new name of Balaram and tells Balaram. Balaram is an elevated status of a name with less freedom of identity. However, Balaram's father seems to have no care what his son is called. Somewhat Balaram's father tries to design Balaram's career but he dies due to his ill health. Balaram was good at studies in his childhood. If he would have studied further, he might have become a great man. We can see his grasping power and intelligence in many situations. The inspection officer calls Balaram as "The White Tiger". White tigers are rare species of tigers and "only a dozen or so have been found in the wild". White

tigers are inbred in zoos, led to a larger population in captivity than in the wild, and forced breeding and caged concrete habitats make the lives of such kingly animals meaningless like Adiga's descriptin of poor servants in India. Balaram first encounters with a white tiger at the National Zoo in New Delhi and notices the sign that reads: "Imagine yourself in the cage".

Balaram struggles to get food, shelter and identity. The deprived people never had been treated as human beings since ages in India. Balaram has also been treated as an animal since his childhood and he has to undergo lot of hardships before his grand success as entrepreneur in Bangalore. The rich expects their pets to be treated as humans and they expect their dogs to be pampered, walked petted, and even washed, but never treat their servants as human beings. Balaram describes how he takes dogs for walk.

"Then I took them around the compound on chain, while the king of Nepal (Guest) sat in a corner and shouted. Don't pull the chain so hard! They are worth more than you are! " (Adiga, 2008:78)

The White Tiger projects to evaluate dichotomies within society- rich, prosperous and other deprived. One develops socially, educationally, technologically, of course not in character. The poor people are mostly ignored or else treated as slaves. Some are still in slums with no food and shelter. The right to vote also divest.

Balaram's father says:

"I 've seen twelve elections- five general, five state, two local- and

someone else voted for me twelve times" (Adiga, 2008 :170)

Balalaram goes from darkness to light and drives his matser Ashok to Delhi. There he sees that in the developed cities also there are slum areas where people like Balaram lives. Balaram lives in a narrow room and suffered with mosquitoes and other inscets. There are many people who came to Delhi to survive, but they are still away from the equal rights for which Balram is struggling.

One day, a child dies in the accident made by Pinky madam but they force Balaram to take this accident on his part just to save Pinky getting trapped in the case. Fortunately, no one registers the case, otherwise Balaram should undergo through the punishment for the crime which he didn't perpetrate. Many Indian frauds like Mr. Ashok visits Delhi for giving bribe to hide their crimes. Adiga boldly pictures the internal affairs of political parties, bribe, black mailing and corruption.

"The poor bastards had come from Darkeness to Delhi to find some light-but they were still in the Darkness" *(Aidga, 2008: 138)*

Generally people struggle for identity. Pinky, the wife of Mr. Ashok gets bored of Delhi's atmosphere and asks Ashok to return to NewYork but he delays. So Pinky leaves for NewYork, her native, to acquire her own identity and status in her society. Aravind conveys that the world is a battle ground and the warriors are the rich and poor. Obviously rich kills poor or makes poor as his/her slave. Balaram was born as a servant but he didn't like to die as a servant. Bill Gates says that born being poor is not our mistake but dying being poor is our

mistake. Balaram does not like to die as a driver with an identity as low born member of Halwai community. He struggles to establish his identity. He finds a way to be out of cage to become 'The White Tiger'. Balaram thinks a lot about his past blames and how the poor is treated by the rich. *"Amazing how much money they have' …. And yet they treat us like animals".* The protagonist becomes corrupt and decides to do something violent as he thinks that will change his life completely.

Balaram not only thought to steal money but he thought to kill Ashok. Balaram planned to restablish his own identity. For that one day he killed Ashok and escaped with his money. He settled in Bangalore and became successful entrepreneur. Balaram undertook various odd jobs as table swiper, coal crusher, servant, chauffer, and driver and at the end became murderer of his own master, Mr. Ashok. He had chosen crime to establish his identity.

Balaram's story resembles to India's present state of affairs and its hierarchical society. Balaram's lack of education and his history is related to crores of marginalized Indians. Marginalized people are searching for their rights and betterment. If suppression and domination may continue, they may turn into criminals. So we need to take steps to eliminate the discrimination between the rich and the poor.

References

Adiga, Aravind. *The White Tiger*, New Delhi: Harper Collins, 2008.

Sebastain S. A.J. *Quest for Identity in Contemporary Indian English Drama,* New Delhi: Adhyayan Publishers, 2011.

A Study on optimal portfolio construction-SI Model

Niveditha M.U. Assistant Professor, Department of Master of Business Administration, Center for Post Graduate Studies- Bangalore Region, Visvesvaraya Technological Universisty, Visvesvaraya Institute of Advanced Technology, Muddenahalli

Abstract: *The Capital market comprising of the new issues market and secondary markets is one of the most sensitive markets in the whole economy. The secondary market enables the investors to continuously rearrange their assets if they do desire by divesting themselves of such assets while others can use their surplus funds to acquire them. This rearrangement is not a product of instant decisions but a thorough research. The major tools used in this are the fundamental analysis and the technical analysis. Among which fundamental analysis requires a large amount of inside data regarding the companies which are concerned and also requires a lot of calculations and a deep knowledge. Where in the technical analysis is comparatively a simple tool for an investor to decide their short or medium term investment decisions. By close watch of the price changes, the trends can be analysed and the timings of entry and exit can be decided. In short the decisions such as when to buy or when to sell the particular scrip or when to recognise the portfolio can be influenced by the technical analysis, moving averages method wherein the daily prices are compared with average of certain number of days.*

Key words: *Beta, Cut-off Rate, Investors, New issue market, portfolio management, Unsystematic Risk.*

1. Introduction:

Capital market is a market of securities, where business enterprises and governments can raise long term funds. Capital market may be classified as primary markets and secondary markets. In primary market new stocks or bond issues are sold to investors via a mechanism known as underwriting. In secondary markets, existing securities are sold and brought among investors or traders, usually on a security exchange, over the counter or elsewhere. The capital market includes stock market and bond market. Market participants include individual retail investors, institutional investors such as mutual funds, banks, insurance companies and hedge funds, and also publically traded corporations trading in their own shares. A stock market or equity market is the aggregation of buyers and sellers (a loose network of economic transactions, not a physical facility or discrete entity) of stocks (shares); these are securities listed on a stock exchange as well as those only traded privately. A stock exchange is a form of exchange which provides services for stock brokers and traders to trade stocks, bonds, and other securities. Stock exchanges also provide facilities for issue and redemption of securities and other financial instruments, and capital events including the payment of income and dividends. Securities traded on a stock exchange include stock issued by companies, unit trusts, derivatives, pooled investment products and bonds.

Construction of Optimal Portfolio

Portfolio is the combination of securities such as stocks, bonds and the money market instruments. The process of blending together the asset classes to obtain the optimum return with minimum risk is termed as portfolio construction. Diversification of investments helps in spreading the risk over money assets. The diversification of securities gives the assurance of obtaining the anticipated return on portfolio. In a diversified portfolio, some securities may not perform as expected, but others may exceed the expectation and making the actual return of the reasonably close to the anticipated one. Keeping a portfolio a single security may lead to a greater likelihood of the actual return somewhat different from that of the expected return. Hence, it is a common practice to diversify securities in the portfolio.

The steps followed in constructing optimal portfolio are as follows:

Determination of objectives

Selection of securities based on the objectives

Choose a suitable approach for construction portfolio

Apply the approach and concert the portfolio

Assessment of risk and return

Statement of Problem : Investing in a single stock associates itself with lot of risk factors around it and that's where the Construction of portfolio of securities has an edge as it has an advantage of diversification which is being done using Sharpe single index model.

Objectives of The Study :

To evaluate performance of various security.

To allocate investment in different stocks considering risk-return criteria.

To construct an optimal portfolio for use investors, by using Sharpe's single index model.

1.4 Scope of the study :

Selection of companies is restricted to SENSEX only.

Out of 30 companies of the index, the companies are chosen and analyzed based on their performance in the past one year.

Only the share price movements, index movements, rate of return on government securities and beta value for the securities for the past one year are taken for analysis.

1.5 Research Methodology:

In this study Secondary Data sources are used. Secondary data collected from various sources like books , journals ,company report and various websites also referred for the study

Also considered the movement of share prices, expected returns, standard deviation and beta values.

A brief profile of the company created for the application of Sharpe"s Model.

The stock price movements, closing index points of the companies and beta values for the past one year are collected for analysis.

The Treasury bill rate of return is considered as the risk free rate of return.

All the values obtained above are interpreted and analyzed using Sharpe's Single Index Model.

Single Index Model: A casual observation of stock prices over a period reveals that most stock prices move with the market index. When the Sensex increases, stock prices also tend to increase and vice-versa. This indicates that some underlying factors influence

the market index as well as the stock prices. Stock prices are linked to the market index and this relationship can be used to determine the return on stock. The following equation can be used towards this purpose:

$$R_i = \alpha_i + \beta_i R_m + e_i$$

Where,

R_i = Expected return on security i

α_i = intercept of the straight line or alpha co-efficient

β_i = slope of the straight line or beta co-efficient

R_m = rate of return on the market index

e_i = error term

The single index model is based on the assumption that stocks vary together because of the common moment in stock market. There are no effects beyond the market (i.e., any fundamental factor effects) that account for the stocks co-moment. The expected return, standard deviation and co-variance of the single index model represent the joint moment of securities.

The variance of security's return
$$\sigma_{i=} \beta_i \sigma_m^2 + \sigma_{ei}^2$$

The covariance of returns between securities i and j is

$$\sigma_{ij} = \beta_i + \beta_j \sigma_m^2$$

Return: The gain or loss of a security in a particular period, the return consists of the income and the capital gains relative on an investment. It is usually quoted as a percentage

Risk: The variance of the security has two components namely; systematic risk or market risk and unsystematic risk or

unique risk. The variance explained by the index is referred to as systematic risk. The unexplained variance is called residual variance or unsystematic risk.

Systematic risk = β_i^2 * variance of market index

$$= \beta_i^2 \sigma_m^2$$

Unsystematic risk = Total variance – Systematic risk

$$e_i^2 = \sigma_i^2 - \text{Systematic risk}$$

Thus, total risk = Systematic risk + Unsystematic risk

$$= \beta_i^2 \sigma_m^2 + e_i^2$$

Portfolio Variance:

From this point, the portfolio variance can be derived

$$\sigma_p^2 = \left[\left(\sum_{i=1}^{N} x_i \beta_i\right)^2 \sigma_m^2\right] + \left[\sum_{i=1}^{N} x_i^2 e_i^2\right]$$

Where,

σ_p^2 = Variance of portfolio

σ_m^2 = Expected variance of index

e_i^2 = Variation in a security's return not related to the market index

x_i = The portion of stock i in the portfolio

Expected return of Portfolio:

Likewise, the expected return on the portfolio can also be estimated. For each security, α_i and β_i should be estimated.

$$R_p = \sum_{i=1}^{N} x_i (\alpha_i + \beta_i R_m)$$

Portfolio return is the weighted average of the estimated return for each security in the portfolio. The weights are

the respective stocks' proportions in the portfolio.

Portfolio Beta: A portfolio's beta value is the weighted average of the beta values of its component stocks, with the weights being their relative shares in the portfolio.

$$\beta_p = \sum_{i=1}^{N} x_i \beta_i$$

β_p is the portfolio beta.

Sharpe's Optimal Portfolio: Sharpe provided a model for the selection of appropriate securities in a portfolio. The selection of any stock is directly related to excess return-beta ratio.

$$\frac{R_i - R_f}{\beta_i}$$

Where,

R_i = the expected return on stock i

R_f = the return on a risk-free 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 risk-free rate of interest such as the rate offered on a government security or Treasury bill. The excess return to beta ratio measures the additional return on a security (excess of the risk-free asset return) per unit of systematic risk or non-diversifiable risk. This ratio provides a relationship between potential risk and reward. The ranking of stocks is done on the base of the excess return to beta. Portfolio manager would like to include stocks with higher ratios. The selection of

stocks depends on a unique cut-off rate such that all stocks with higher ratios of $\frac{R_i - R_f}{\beta_i}$ are included, and stocks with lower ratios are left out. The cut-off point is denoted by C^*. The steps involved in finding out the stocks to be included in the optimal portfolio are as follows:

Find out the excess returns to beta ratio for each stock under consideration.

Rank them from the highest to lowest.

Calculate C_i for all stocks according to ranked order using the following formula

$$C_i = \frac{\sigma_m^2 \sum_{i=1}^{N} \frac{(R_i - R_f)\beta_i}{\sigma_{ei}^2}}{1 + \sigma_m^2 \sum_{i=1}^{N} \frac{\beta_i^2}{\sigma_{ei}^2}}$$

Where,

σ_m^2 = variance of the market index

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

1. The cumulated values of C_i start declining after a particular C_i and that point is taken as the cut-off point; also that stock ratio is the cut-off ratio C.

Construction of an optimal portfolio:

The portfolio manager has to find out how much will be invested in each security, once the securities are selected. The percentage of funds to be invested in each security can be estimated as follows:

$$X_i = \frac{Z_i}{\sum_{i=1}^{N} Z_i}$$

$$Z_i = \frac{\beta_i}{\sigma_{ei}^2} \left(\frac{R_i - R_f}{\beta_i} - C^* \right)$$

Where,

R_i = Return

σ_i = Risk

β_i = Beta

Systematic Risk = $\beta_i^2 * \sigma_m^2$

Unsystematic Risk (σ_{ei}^2) = $\sigma_i^2 -$ Systematic Risk

$\sigma_m = 3.7242$

$\sigma_m^2 = 13.8698$

The first expression indicates the weights on each security and they add up to one. The second shows the relative investment in each security. There is dual variance of the unsystematic risk has a role in determining the amount to be invested in each security.

Table showing calculation of Systematic Risk and Unsystematic Risk

SL NO	Company	R_i	σ_i	β_i	σ_i^2	β_i^2	Sys. Risk	σ_{ei}^2
1	Bajaj Auto	16.222	4.966	0.911	24.657	0.830	11.507	13.150
2	BHEL	20.125	12.237	1.930	149.747	3.726	51.679	98.068
3	BhartiAirtel	14.822	10.028	1.737	100.567	3.017	41.846	58.721
4	Cipla	2.516	4.930	-0.326	24.308	0.106	1.474	22.833
5	Coal India	-1.426	9.870	1.749	97.422	3.058	42.417	55.006
6	Dr. Reddy's	39.912	6.049	-0.110	36.592	0.012	0.168	36.424
7	GAIL	18.940	6.427	0.762	41.309	0.581	8.056	33.253
8	HDFC Bank	21.238	7.037	1.635	49.520	2.672	37.065	12.454
9	Hero Moto Corp.	41.591	6.146	0.414	37.768	0.172	2.380	35.388
10	Hindalco Indus.	51.886	11.713	0.997	137.191	0.994	13.785	123.406
11	HUL	29.445	7.858	0.345	61.741	0.119	1.648	60.092
12	HDFC	9.169	6.266	1.359	39.264	1.848	25.633	13.632
13	ICICI Bank	26.369	12.348	3.144	152.469	9.887	137.129	15.340
14	Infosys	19.630	10.428	-0.839	108.744	0.704	9.757	98.986
15	ITC	15.208	5.583	0.772	31.171	0.596	8.263	22.908
16	Larsen & Toubro	11.014	16.020	2.833	256.625	8.023	111.282	145.342
17	M & M	15.856	6.709	1.154	45.008	1.332	18.480	26.528
18	Maruti Suzuki	53.715	13.303	2.670	176.979	7.130	98.895	78.084
19	NTPC	-13.369	7.569	0.887	57.285	0.786	10.903	46.382
20	ONGC	5.727	7.465	1.558	55.731	2.426	33.653	22.078
21	Rel. Industries	21.150	6.802	1.134	46.263	1.285	17.822	28.441
22	SesaSterlite Ltd	30.900	15.309	-0.099	234.359	0.010	0.137	234.222
23	SBI	-0.585	11.130	2.356	123.871	5.552	77.001	46.870
24	Sun Pharma.	-17.291	15.293	1.117	233.884	1.247	17.293	216.591
25	TCS	35.098	8.679	-0.526	75.329	0.277	3.836	71.493
26	Tata Motors	44.304	8.821	1.188	77.803	1.412	19.590	58.213
27	Tata Power	-7.621	9.067	1.513	82.210	2.288	31.730	50.480
28	Tata Steel	35.930	14.651	0.933	214.659	0.870	12.073	202.586
29	Wipro	29.824	11.659	-1.224	135.932	1.499	20.784	115.147

Table showing ranking of companies based on excess return to beta

SL NO	Company	R_i	$R_i - R_f$	β_i	$\dfrac{(R_i - R_f)}{\beta_i}$	Rank
1	Bajaj Auto	16.2220	16.1305	0.9109	17.7092	10
2	Bharat Heavy Electricals	20.1253	20.0338	1.9303	10.3787	13
3	BhartiAirtel	14.8221	14.7306	1.7370	8.4806	14
4	Cipla	2.5160	2.4245	-0.3260	-7.4361	22
5	Coal India	-1.4263	-1.5178	1.7488	-0.8679	20
6	Dr. Reddy's	39.9117	39.8202	-0.1100	-361.9018	29
7	GAIL	18.9399	18.8484	0.7621	24.7317	6
8	HDFC Bank	21.2376	21.1461	1.6347	12.9354	12
9	Hero Moto corp.	41.5914	41.4999	0.4142	100.1834	1
10	Hidalgo Industries	51.8864	51.7949	0.9969	51.9540	3
11	Hindustan Unilever	29.4454	29.3539	0.3447	85.1491	2
12	HDFC	9.1691	9.0776	1.3594	6.6774	16
13	ICICI Bank	26.3685	26.2770	3.1443	8.3569	15
14	Infosys	19.6304	19.5389	-0.8388	-23.2952	25
15	ITC	15.2082	15.1167	0.7718	19.5851	8
16	Larsen & Toubro	11.0143	10.9228	2.8326	3.8562	17
17	Mahindra & Mahindra	15.8557	15.7642	1.1543	13.6569	11
18	Maruti Suzuki	53.7154	53.6239	2.6702	20.0820	7
19	NTPC	-13.3691	-13.4606	0.8866	-15.1819	23
20	ONGC	5.7266	5.6351	1.5577	3.6176	18
21	Reliance Industries	21.1504	21.0589	1.1336	18.5778	9
22	SesaSterlite Ltd	30.8997	30.8082	-0.0993	-310.2397	29
23	State Bank Of India	-0.5847	-0.6762	2.3562	-0.2870	19
24	Sun Pharmaceutical	-17.2915	-17.3830	1.1166	-15.5675	24
25	Tata Consultancy Services	35.0976	35.0061	-0.5259	-66.5634	28
26	Tata Motors	44.3040	44.2125	1.1884	37.2018	5
27	Tata Power	-7.6205	-7.7120	1.5125	-5.0988	21
28	Tata Steel	35.9304	35.8389	0.9330	38.4135	4
29	Wipro	29.8240	29.7325	-1.2241	-24.2883	28

Where,

$R_i - R_f$ = Excess Return

$\dfrac{(R_i - R_f)}{\beta_i}$ = Excess return to beta ratio

C Values for each company is calculated using the following formula

$$\frac{\sigma_m^2 \sum_{i=1}^{N} \frac{(R_i - R_f)\beta_i}{\sigma_{ei}^2}}{1 + \sigma_m^2 \sum_{i=1}^{N} \frac{\beta_i^2}{\sigma_{ei}^2}}$$

σ_m^2 = 13.8698

Table showing rearranging of companies according to excess return to beta

Sl. No	Company	R_i	$R_i - R_f$	β_i	σ_{et}^2	$\dfrac{(R_i - R_f)}{\beta_i}$	Rank
1	Hero Moto corporation	41.5914	41.4999	0.4142	35.3884	100.1834	1
2	Hindustan Unilever	29.4454	29.3539	0.3447	60.0925	85.1491	2
3	Hindalco Industries	51.8864	51.7949	0.9969	123.4060	51.9540	3
4	Tata Steel	35.9304	35.8389	0.9330	202.5865	38.4135	4
5	Tata Motors	44.3040	44.2125	1.1884	58.2127	37.2018	5
6	GAIL	18.9399	18.8484	0.7621	33.2531	24.7317	6
7	Maruti Suzuki	53.7154	53.6239	2.6702	78.0843	20.0820	7
8	ITC	15.2082	15.1167	0.7718	22.9078	19.5851	8
9	Reliance Industries	21.1504	21.0589	1.1336	28.4414	18.5778	9
10	Bajaj Auto	16.2220	16.1305	0.9109	13.1504	17.7092	10
11	Mahindra & Mahindra	15.8557	15.7642	1.1543	26.5278	13.6569	11
12	HDFC Bank	21.2376	21.1461	1.6347	12.4543	12.9354	12
13	Bharat Heavy Electricals	20.1253	20.0338	1.9303	98.0678	10.3787	13
14	BhartiAirtel	14.8221	14.7306	1.7370	58.7212	8.4806	14
15	ICICI Bank	26.3685	26.2770	3.1443	15.3400	8.3569	15
16	HDFC	9.1691	9.0776	1.3594	13.6317	6.6774	16
17	Larsen & Toubro	11.0143	10.9228	2.8326	145.3423	3.8562	17
18	ONGC	5.7266	5.6351	1.5577	22.0783	3.6176	18
19	State Bank Of India	-0.5847	-0.6762	2.3562	46.8703	-0.2870	19
20	Coal India	-1.4263	-1.5178	1.7488	55.0055	-0.8679	20
21	Tata Power	-7.6205	-7.7120	1.5125	50.4803	-5.0988	21
22	Cipla	2.5160	2.4245	-0.3260	22.8334	-7.4361	22
23	NTPC	-13.3691	-13.4606	0.8866	46.3819	-15.1819	23
24	Sun Pharmaceutical	-17.2915	-17.3830	1.1166	216.5910	-15.5675	24
25	Infosys	19.6304	19.5389	-0.8388	98.9865	-23.2952	25
26	Wipro	29.8240	29.7325	-1.2241	115.1474	-24.2883	26
27	Tata Consultancy Services	35.0976	35.0061	-0.5259	71.4931	-66.5634	27
28	SesaSterlite Ltd	30.8997	30.8082	-0.0993	234.2219	-310.2397	28
29	Dr. Reddy's	39.9117	39.8202	-0.1100	36.4240	-361.9018	29

Table showing calculation of cut-off

SL NO	Company	$\dfrac{(R_i - R_f) * \beta_i}{\sigma_{ei}^2}$	$\sum \dfrac{(R_i - R_f) * \beta_i}{\sigma_{ei}^2}$	$\dfrac{\sum \dfrac{(R_i - R_f) * \beta_i}{\sigma_{ei}^2}}{\sigma_m^2}$	$\dfrac{\beta_i^2}{\sigma_{ei}^2}$	$\sum \dfrac{\beta_i^2}{\sigma_{ei}^2}$	Cut-off
1	Hero Moto corp.	0.4858	0.4858	6.7376	0.0048	0.0048	6.3131
2	Hindustan Unilever	0.1684	0.6542	9.0733	0.0020	0.0068	8.2885
3	Hindalco Industries	0.4184	1.0726	14.8767	0.0081	0.0149	12.3316
4	Tata Steel	0.1650	1.2376	17.1659	0.0043	0.0192	13.5594
5	Tata Motors	0.9026	2.1403	29.6852	0.0243	0.0434	18.5243
6	GAIL	0.4320	2.5723	35.6766	0.0175	0.0609	19.3394
7	Maruti Suzuki	1.8338	4.4060	61.1108	0.0913	0.1522	*19.6417 C**
8	ITC	0.5093	4.9154	68.1753	0.0260	0.1782	19.6358
9	Reliance Industries	0.8393	5.7547	79.8164	0.0452	0.2234	19.4741
10	Bajaj Auto	1.1173	6.8720	95.3127	0.0631	0.2865	19.1636
11	Mahindra & Mahindra	0.6859	7.5579	104.8266	0.0502	0.3367	18.4870
12	HDFC Bank	2.7756	10.3335	143.3238	0.2146	0.5513	16.5762
13	Bharat Heavy Electricals	0.3943	10.7278	148.7930	0.0380	0.5893	16.2201
14	BhartiAirtel	0.4357	11.1636	154.8365	0.0514	0.6407	15.6622
15	ICICI Bank	5.3862	16.5497	229.5415	0.6445	1.2852	12.1933
16	HDFC	0.9053	19.0411	264.0968	0.1356	1.6409	11.1157
17	Larsen & Toubro	0.2129	19.2540	267.0493	0.0552	1.6961	10.8891
18	ONGC	0.3976	19.6516	272.5635	0.1099	1.8060	10.4636
19	State Bank Of India	-0.0340	19.6176	272.0921	0.1184	1.9244	9.8258
20	Coal India	-0.0483	19.5693	271.4228	0.0556	1.9800	9.5361
21	Tata Power	-0.2311	19.3382	268.2179	0.0453	2.0254	9.2199
22	Cipla	-0.0346	19.3036	267.7377	0.0047	2.0300	9.1830
23	NTPC	-0.2573	19.0463	264.1689	0.0169	2.0470	8.9881
24	Sun Pharmaceutical	-0.0896	18.9567	262.9259	0.0058	2.0527	8.9216
25	Infosys	-0.1656	18.7911	260.6296	0.0071	2.0598	8.8142
26	Wipro	-0.3161	18.4751	256.2455	0.0130	2.0728	8.6133
27	TCS	-0.2575	18.2175	252.6739	0.0039	2.0767	8.4780
28	SesaSterlite Ltd	-0.0131	18.2045	252.4928	0.0000	2.0767	8.4718
29	Dr. Reddy's	-0.1203	18.0842	250.8244	0.0003	2.0771	8.4145

The C_i values go's on increasing up to a certain point and then starts decreasing in the table shown. The highest point is called cut off point (C_i), the securities which are above C* point are chosen to the portfolio.i.e., the companies to be included in the portfolio are:

The C_i values go's on increasing up to a certain point and then starts decreasing in the table shown. The highest point is called cut off point (C_i), the securities which are above C* point are chosen to the portfolio.i.e., the companies to be included in the portfolio are:

Table showing selected companies for investment

Sl. No.	Company	Cut off
1	Hero Moto corp.	6.3131
2	Hindustan Unilever	8.2885
3	Hindalco Industries	12.3316
4	Tata Steel	13.5594
5	Tata Motors	18.5243
6	GAIL	19.3394
7	Maruti Suzuki	19.6417

Calculation of Z_i value, using formula

$$Z_i = \frac{\beta_i}{\sigma_{ei}^2}\left(\frac{R_i - R_f}{\beta_i} - C^*\right)$$

Table showing calculation of Z_i

Sl. No.	Company	Z_i
1	Hero Moto corp.	0.3905
2	Hindustan Unilever	0.1296
3	Hindalco Industries	0.2602
4	Tata Steel	0.0807
5	Tata Motors	0.4261
6	GAIL	0.0889
7	Maruti Suzuki	0.0402

Calculation of X_i, using formula

$$X_i = \frac{Z_i}{\sum_{i=1}^{N} Z_i}$$

Table showing calculation of X_i

Sl. No.	Company	Z_i	X_i	$X_i\%$
1	Hero Moto corp.	0.3905	0.2838	28.38
2	Hindustan Unilever	0.1296	0.0942	9.42
3	Hindalco Industries	0.2602	0.1891	18.91
4	Tata Steel	0.0807	0.0586	5.86
5	Tata Motors	0.4261	0.3096	30.96
6	GAIL	0.0889	0.0646	6.46
7	Maruti Suzuki	0.0402	0.0292	2.92
	$\sum Z_i$	1.3759		

Findings:

➢ The Single index model is providing a complete comparative study on the selected lot of stocks which are yielding varied returns.

➢ Through calculating the single cut-off rate one can easily and accurately arrive at optimal portfolio of stocks that could be selected for investment.

➢ Single index is considering and providing various weightage aspects which will provide a clear picture of investment for the investors.

➢ According to the excess return beta ratio Hero Moto corp. ranks first followed by Hindustan Unilever, Hindalco Industries, Tata Steel, Tata Motors, GAIL and Maruti Suzuki.

➢ Z_i Helps to determine the proportion of funds which is deployed in each security, which ensures an optimal return for the investors.

➢ Among the 30 companies Maruti Suzuki is giving highest returns with 53.72% followed by Hindalco Industries 51.89%, Tata Motors with 44.30%, Hero Moto Corp. with 41.59% and Dr. Reddy's with 39.91%.

➢ During the analysis the prices of Larsen & Toubro is more volatile, followed by Sesa Sterlite Limited, Sun Pharmaceutical, Axis Bank and others.

➢ The scripts of Axis Bank, ICICI Bank, Larsen & Toubro are more sensitive to the market risk.

➢ The individual investor have a important role to play in the stock market, as they have their influences on the nifty. The individual investor includes retail investors, speculators, daily traders etc.

➢ **Suggestions:**

➢ The investors who have high risk appetite can invest their money in Maruti Suzuki, Hindalco Industries and Tata steel.

➢ The investors who look forward for getting high returns which have nominal risk can invest in Dr. Reddy's Laboratories, Hero Moto Corp., Tata Consultancy Services and Tata Motors.

➢ Even though the companies which were chosen from all the sectors which constitute the SENSEX, the optimal portfolio constructed companies of securities which belongs to only the Automotive Industry, Consumer Goods Industry, Metals and Mining Industry, Iron and Steel Industry & Oil and Gas Industry. The portfolio investor can invest in these sectors

➢ Along with Sharpe's Single Index Model it is wise for the investors to make the technical analysis and fundamental analysis of the companies before making the investment in any particular company.

Conclusion:

The returns which is obtained by each of the companies and the beta, have the sensitiveness of the stock return to the changes in the market returns which are observed is shown in the above table. Also a potion in which the securities are invested to obtain optimum returns is also calculated and is represented. It is also assumed that casual observation of the stock prices over a period of time reveals that most of the stock prices move on to the market index. When the sensex increases, the stock prices also tend to increase and vice-versa. This indicates that some of the underlying factors affect the market index as well as the stock prices. Stock prices are related to the market index and this relationship could be used to estimate the returns on the stock. BSE companies like investment in Maruti Suzuki, Hindalco Industries,

Tata Motors, Hero Moto Corp and Dr. Reddy's Laboratories have given a very good return from the past so investment in these stock will be more beneficial for the long time investments.

References :

1)   Allen, J., Walter, E. & Ying, L. (2007) . A comparison of Canadian and US universal banks: efficiency, productivity, and the role of new technology. Money Affairs, Jan-Jun 2007, p. 61-96.

2)   Burhonov, J. (2006). Islamic Banking Operations of Commercial Banks Under Islamic Banking Scheme (IBS) of Malaysia: The Performance Analysis. Bangkok: Faculty of Economics, Thammasat University. Retrieved from: http://blogpdf.com/islamic-banking-operationsof-commercial-banks-under-islamic-...-25524110.

3)   Dalrymple, B. (2010). How Sharia law is affecting global interest rate determination. Journal of Finance and Accountancy, July 2010, Vol 3, p1.

4)   Donald E Fischer, Security Analysis and portfolio Management by Donald E Fischer and Ronald J Jordan (6th edition), Pearson Publication.

5)   Hasan, Maher & Jemma Dridi (2010). The Effects of the Global Crisis on Islamic and Conventional Banks: A Comparative Study. IMF Working Paper. WP/10/201.

6)   Hassan, Wael Moustafa. (2011). "*Risk Management Practices: A comparative analysis between Islamic banks and conventional banks in the Middle East*". International journal of academic research (IJAR), Volume 3, No. 3,288-295.

7)   Khan, M. Mansoor & M. Ishaq Bhatti, (2008). "*Islamic banking and finance: on its way to globalization*". Managerial Finance, Vol. 34 Iss: 10, pp.708 – 725.

8)   Kumar, Arun .S.S and Manjunatha K.(2013),"*A Study on Construction of optimal portfolio using Sharpe's Single Index Model*", International Journal of Research in Commerce,IT and Management, 3(4),pp:88-98.

9)   Prasanna Chandra, "*Investment Analysis and Portfolio Management*",3rd edition ,Tata Mcgraphill,PP.

10)   Samad, Abdus, et al (2005). "*Islamic Banking and Finance in Theory and Practice: The Experience of Malaysia and Bahrain*". The American Journal of Islamic Social Sciences, Vol 22:.2, 69-86.

11)   Shaikh, Salman, Amanat Jalbani. (2009). "*Risk Management in Islamic and Conventional Banks: A Differential Analysis*". Journal of Independent Studies & Research, Vol 2 No 2, 67-79.

12)   Venkatesh, J. & Sat Paul Parashar. (2010). How did Islamic Banks do during global financial crisis? Banks and Bank systems, Vol 5, Issue 4, p. 54-62.

13)   V.A.Avadhani, "*Security Analysis and portfolio Management*",4th edition, Himalaya Publication,pp.

14)   Weir, D. & Al Janahi A. (2005). How Islamic Banks Deal with Problem Business Situations: Islamic Banking as a Potential Model for Emerging Markets. Thunderbird International Business Review, Vol. 47(4), 429–445.