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Evaluating Stock Performance with Jensen Alpha and Beta

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Abstract

The primary goal of an investment is to earn returns above those made by the market. In this direction, the study concentrates on the abnormal returns of the stocks to verify how the performance indicators Jensen's Alpha and Beta depict returns. The paper is an attempt to define the concept of Alpha and Beta, basis of its theoretical framework, the computation of the measure and an insight into its precise use in the analysis of a stock. This study is conducted with select top thirty companies listed in the BSE from industries pertinent for the growth of the economy such as Paints and Varnishes, FMCG, Engineering & Construction, Automobiles, Food and Beverages, Banking, Steel, Oil & Natural Gas, Computer Software, Tobacco and Finance. The study finds evidence that 20 percent of the stocks have a negative beta which means the investment moves in the opposite direction of the stock indices. All the stocks have positive alpha values indicating that these companies have created value. This study would enable to channelize investments into stocks with potential higher returns in the future.

Key Words : Beta, Expected returns, Jensen Alpha, market index, R squared

1. Introduction

The Jensen's Alpha and Beta and its application, originated to improve the traditional valuation to achieve a higher predictability of stock returns. The Jensen's Alpha and Beta has significant power to predict the cross-section of stock returns. The paper measures the Jensen Alpha and beta value of shares and evaluates it as a risk and performance measure of the firm with the use of the market index SENSEX.

2. Literature Review

2.1 Utility of Jensen Alpha and Beta

Academic literature suggests that both Jensen Alpha and beta are useful for the risk estimation and returns of firms.

Mark Grinblatt and Sherin Hitman (1995) observed the performance measures to compare the returns of the actively managed portfolio with a passive portfolio of the same level of risk.

Kothari and Warner (2001) evaluated the ability of numerous risk-adjusted performance measures, such as Sharpe ratio and Jensen's alpha, to identify investment skills and concluded that the performance measures had difficulties in detecting investment skills.

Ken Hung, Chin-Wei Yang & Dwight B (2006) examined the conditions under which measures such as Sharpe index, Treynor index, Jensen alpha, and the Adjusted Jensen's alpha were similar and different. The well-diversified portfolios would have similar rankings for the Treynor, Sharpe indices, and Adjusted Jensen's alpha ranking and the alpha rankings coincided only when the portfolios had similar betas.

Metts Glen, Slaughbaugh Micheal & Syed Makander Atiya,(2008) used Jensen Alpha to evaluate mutual fund performance and develop a trading heuristic for portfolio management, Their results proved that Jensen Alpha were a useful tool for analysis

Bhavsar, Damani and Anvesha (2014) compared the performance of select private and public sector mutual funds and concluded that public sector holdings were better performers than the private sector complements. Also, with Jensen's Alpha, private sector funds had ranked well.

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Tingyu Du Ms (2015) based his research on Jensen's CAPM model (1968) and examined the fund manager's skill is contributing to fund's performance taking a five-year span from 2009 to 2014 to verify if the high total return ranking was associated with higher Jensen's Alpha. The findings correspond with Jensen's research results.

Fabian Hollstein(2020) examined the estimation of global and local betas for a large set of Developed and Emerging international markets. Their results showed that for global and local market betas, the optimal window length is at roughly 24 and 12 months, respectively, for most Developed Markets. It tends to be somewhat longer for Emerging Markets.

The research literature comprises mostly involves an evaluation of the measures Jensen Alpha and Beta for mutual fund performance comparing the returns of portfolios. There exists a research gap of empirical evidence of the relationship between these performance measures and stock returns in India. Hence it is prudent to examine its application to stock returns in the Indian market with an inclusive sample of companies representing various sectors of the economy.

2.2 Objectives of the Study

The following are described as the objectives of the study:

1. To measure the Jensen Alpha and beta value of shares of the selected companies with the use of the market index SENSEX.
2. To evaluate the Jensen Alpha and beta value as a risk and performance measure of the firm

3 Research Methodology

3.1 Method

Beta calculated values are easily available on several databases and websites but the study estimates both alpha and beta values using data for a twelve month period. Share price data from the website yahoofinance.com and market index values of BSE SENSEX from the BSE website had been used in fairly straightforward preferred linear regression technique. To calculate a stock's beta the data includes:

- Closing daily stock prices for the stock being examined from March 2019 to February 2020
- Closing daily prices for the index (BSE SENSEX Index) being chosen as a proxy for the stock market for the above mentioned period
- Annual Dividend information of the company

The formulas for this metric can be written as:

Stock returns= ((Price of stock x Split Factor - Previous Day price + Dividend x Split Factor)/Stock Price) x Index

Market Returns= ((Index of Market - Previous Day Index of Market)/ Previous Day Index of Market) x Index

Alpha = Sum (First Returns of Stock: last Returns of Stock) / Sum(First Index: last Index) - Sum(First Returns of Market Index: last Returns of Market Index) / Sum(First Index: last Index) x Beta

Beta = Covariance (stock versus market returns)/Variance of the Stock Market

3.2 Alpha Values

The alpha values are a measure of excess returns on an investment, adjusted for risk. It is an indicator of its ability to provide returns in excess of a benchmark (such as BSE SENSEX) The firm destroyed value when alpha < risk-free investment return,; if alpha = risk-free investment return, then the firm has neither created nor destroyed value; but when the alpha > risk-free investment return, then the firm has created value.

3.3 Data Collection

This study is based on secondary data with select thirty companies listed in the Bombay Stock Exchange. The study has an inclusive sample of thirty companies to draw inferences across the sectors in India; three companies from each of the above category of industries were chosen for the study.

The share prices and dividend information for a period of twelve months from 1st March 2019 to 28th February 2020 was collected from www.yahoofinanceindia.com. The market index values for BSE SENSEX were taken from www.bseindia.com. BSE SENSEX was chosen because it is regarded as the pulse of the domestic stock market with thirty most actively traded stocks representing the various industrial sectors of the Indian economy.

3.4 Sample

The following companies have been included in the sample. While selecting of the sample it has been ensured that they have a minimum turnover of 5 crores and fall in the top list of companies in the respective sector in 2019.The companies included are Paints & Varnishes industry- Akzo Nobel, Asian Paints, Kansai Nerolac; FMCG industry- Colgate, Godrej, HLL; Engineering & Construction-Hindustan Construction Company, L&T, NCC; Steel-Jindal South West Steel, Tata Steel, Vizag Steel; Automobiles- Maruti Suzuki, Eicher, Mahindra & Mahindra; Food & Beverage-Nestle ,Britannia; Oil & Natural Gas-BPCL,HPCL & ONGC; Information Technology-Infosys, Wipro, HCL; Tobacco-ITC. Godfrey Philips, Kothari Products and Banking and Finance-ICICI, Kotak Mahindra, HDFC and Bajaj Finance

4. Results

The results of the computation of beta and alpha values are depicted in the following tables:

Table 4a Regression Statistics and Risk Parameters

	Co1	Co2	Co3	Co4	Co5	Co6	Co7	Co8	Co9	Co10
Intercept (Alpha)=	0.0073	0.0072	0.0079	0.0078	0.0083	0.0094	0.0106	0.0088	0.0124	0.0095
Slope (Beta)	0.1414	-0.2106	0.0139	-1.3635	-0.0383	-0.1606	0.4300	0.1694	0.3545	0.1906
Rf(1- Beta)	-0.0005	-0.0036	0.0013	-0.0030	0.0002	-0.0003	0.0000	0.0024	0.0011	0.0014
Intercept-Rf(1-Beta)	0.0077	0.0108	0.0066	0.0108	0.0081	0.0097	0.0105	0.0064	0.0113	0.0081
Variance of the stock	0.0044	0.0043	0.0045	0.0043	0.0044	0.0043	0.0054	0.0044	0.0054	0.0048
Variance of the market	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Systematic variance	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unsystematic variance	0.0044	0.0043	0.0045	0.0042	0.0044	0.0043	0.0053	0.0044	0.0054	0.0048
R squared	0.0004	0.0008	0.0000	0.0339	0.0000	0.0005	0.0026	0.0005	0.0018	0.0006

Table 4b Regression Statistics and Risk Parameters

	Co11	Co12	Co13	Co14	Co15	Co16	Co17	Co18	Co19	Co20
Intercept (Alpha) =	0.009	0.012	0.009	0.010	0.009	0.00660	0.00861	0.00822	0.010	0.010
Slope (Beta)=	0.368	0.233	0.150	0.159	-	0.03048	-0.2221	-0.0812	0.316	0.213
Rf(1- Beta) =	-	0.004	-	-	-	-0.0027	0.0003	-0.0020	0.000	0.001
Intercept-Rf(1-Beta)=	0.010	0.008	0.009	0.011	0.010	0.00826	0.00887	0.01018	0.009	0.009
Variance of the stock=	0.004	0.005	0.004	0.004	0.004	0.00427	0.00438	0.00462	0.005	0.004
Variance of the market	0.000	0.000	0.000	0.000	0.000	7.83E-	7.83E-	7.83E-	0.000	0.000
Systematic variance=	0.000	0.000	0.000	0.000	0.000	7.27E-	3.86E-	5.16E-	0.000	0.000
Unsystematic variance=	0.004	0.005	0.004	0.004	0.004	0.00427	0.00438	0.00462	0.005	0.004
R squared =	0.002	0.000	0.000	0.000	0.000	1.7E-05	0.00088	0.00011	0.001	0.000

Table 4c Regression Statistics and Risk Parameters

	Co21	Co22	Co23	Co24	Co25	Co26	Co27	Co28	Co29	Co30
Intercept (Alpha) =	0.0094	0.0082	0.0091	0.0079	0.0073	0.0079	0.0101	0.0087	0.0087	0.0070
Slope (Beta)=	0.0391	-0.4452	0.0221	0.1544	0.0963	-0.0293	0.2826	0.3893	0.3830	0.2209
Rf(1- Beta) =	-0.0011	-0.0004	-0.0002	-0.0002	0.0002	-0.0004	0.0008	0.0007	0.0007	0.0002
Intercept-Rf(1-Beta)=	0.0105	0.0087	0.0093	0.0081	0.0071	0.0083	0.0093	0.0081	0.0081	0.0068
Variance of the stock=	0.0059	0.0049	0.0045	0.0043	0.0044	0.0045	0.0042	0.0049	0.0050	0.0047
Variance of the market =	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Systematic variance=	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unsystematic variance=	0.0059	0.0049	0.0045	0.0043	0.0044	0.0045	0.0042	0.0049	0.0050	0.0047
R squared =	0.0000	0.0032	0.0000	0.0004	0.0002	0.0000	0.0015	0.0023	0.0023	0.0008

Table 4d Descriptive Statistics

	Alpha	Beta	Expected Returns
Mean	.00898439	.05389915	.06796445
Median	.00876297	.14594389	.07302691
Mode	.006609	1.363521	009994
Std. Deviation	.001455629	341319209	.018772557
Variance	.000	.116	.000
Range	.005823	1.793558	.098646
Minimum	.006609	-1.363521	-.009994
Maximum	.012431	.430037	.088652
Skewness	.687	-2.604	-2.604

Alpha have means greater than the medians, suggesting that the data is positively skewed. Beta and expected returns have medians greater than the means, suggesting that the distributions of multiples are negatively skewed. The standard deviation and variance are the highest for beta. The results of the study are similar to that obtained by several previous researchers

5 Correlation and Regression Analysis

A further test of the relationship between the variables is conducted with Karl Pearson's coefficient of correlation. The results are presented in the following table.

Table 5a Correlation

	Mean	Correlation Coefficient	Significance
Alpha and Expected Return		0.376	.041*
Beta and Expected return		0.221	.241

The study revealed that the expected returns are correlated highest with alpha among the two. They are significant both at 5% and 1% levels. The analysis with Karl Pearson's coefficient shows that Alpha and beta are good performance measures in explaining the expected returns. Controlling for the effect of risk in returns Alpha helps to add value over a benchmark. It is significant to consider that alpha first alters for the extent of market risk undertaken. Alpha is whatever remains after the market risk (beta) is deducted in the calculation of the Jensen's measure. A regression analysis is conducted to examine the relationship between expected returns and the other predictors. The results are presented in the following table

Table 5b Regression Results Expected Returns as Dependent Variable-Predictor Alpha

	Beta	Standardised Coefficients	t value	Significance
(Constant)	.024		1.189	.244
Alpha	4.845	.376	2.145	.041
			R square =0.14	

The regression model shows that Alpha as predictor has a significant difference on the dependent variable. The predictor Alpha shows improved performance under the model with a higher beta coefficient. The standardised coefficients are used for comparing the influence of the independent variable. Its higher t value indicates its influence on expected returns.

Table 5c ANOVA

Model	Sum of Squares	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.001	1	.001	4.600	.041(a)
	Residual	.009	28	.000		
	Total	.010	29			

The model shows a high influence of the predictors with expected returns. The predictor is positively correlated with expected returns. The regression model shows that beta as a predictor has a significant difference on the dependent variable.

Each of the measures supports the prediction ability of expected returns. The results reveal that Alpha and beta are correlated highest with returns.

6. Results and Discussion

The results indicate that most of companies depict good performance and professional management as per Jensen Alpha and Beta. Most of the Alpha values are positive indicating that these companies have created value. Alpha shows improved performance under the model with expected returns but with a higher beta coefficient. The study also finds evidence of relationship between beta and expected returns of the stock. There is an evidence of negative beta for 20 percent of the stocks indicating the investment moves in the opposite direction of the stock. Recession-resistant businesses in FMCG sector with Colgate, Godrej and HLL have little or no correlation to the market which means they perform well even under poor economic conditions. Right investing is not to fall prey to generalizations based on beta but to determine the cause that the beta is negative and then decide if it's a good fit for your portfolio. The scope for future research can be extended to analyse the relevance of the criteria in determination of future stock prices. The study concludes that the investor must take prudent investment decisions by analysing the return and risk parameters of the stocks to achieve their investment objectives. Jensen Alpha estimation is important for stock selection.

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