Risk & Return Analysis: Evidence from The Indian Equity Market

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Abstract
A country's stock market performs an important role in developing industries, its importance is well recognized by industries and investors alike. The securities exchange purpose long-term capital to the listed enterprises by assembling reserves from various investors and permit them to grow in business and furthermore offers investors elective investment avenues to place their excess reserves in those investment avenues. The investors cautiously see exhibition of securities exchanges by noticing composite market index, formerly capitalizing funds. This study analyses risk and return behaviour of equity share prices of diverse companies of different sectors of NSE India. Stock returns of all companies listed in National Stock Exchange was considered in this study from July 2005 to June 2019. The major goal of it is to know about effects of main factors which replicates stock price movements. This research also analyzed the various factors like net profit margin, return on assets, earnings per share, return on capital employed and price to book value.

I.   Introduction
Stock market has significant role in apportionment of funds, both as direct source of reserves and as factor of value and borrowing power of firms. Though, an emerging body of empirical indication has elevated some queries about whether the equity markets are relevant and competent in sense of suitably reflecting the available information.' Major fluctuations in equity prices in many countries throughout 1980s provided supplementary evidence that market valuations were more flexible than firms' earnings projections. (Tease, 1993). Determinants of stock prices are generally stuff of debate. Economic and financial market stakeholders have various opinions as far as the value of an asset is concerned. In competent market, share prices will mainly regulate by essential determinants like earnings per share, dividend per share, payout ratio, size of firm, net profit margin, return on assets and return on capital employed, etc. Fundamental analysts use stock valuation ratios to acquire the current fair value of a stock and prediction future stock prices. If the reasonable value of share is does not equal the current share price, analysts believe that the share is either over or undervalued and that market value will ultimately move toward fair value. (Srinivasan, 2012) Ratio analysis is utilized to measure the financial achievement of companies. Actually, ratios expose significant authenticities related to the operations and economic position of firms. Financial expert use market ratios to determine financial position. It reveals significant facts about the results and present information on the operating and financial position of companies. Investors and shareholders think about the market price per share of a companies and ratios are based on the present market conditions. Earnings per share (EPS) is usually measured the most significant aspect in determining share price and organization value. (Islam et al, 2014). The purpose of this study is to know about impact of major determinants which imitates stock price movements.

II.   Review of literature
The association among share price changes as well as fundamental factors had broadly examined in finance literature. Zahir and Khanna (1982) examined factors of share price, using multiple linear regression model of 101 industries in India during 1976-77 and 1977-78. The study initiates that dividend per share and yield occurred as an important factor of the stock price. Coefficient of book value was upbeat during and extremely significant except 1977-78. Effect of the earning-price multiplier on share prices seemed to be very weak. Balakrishnan (1984) examined the effect of earning per share, dividend per share and book value on the stock price of general engineering and cotton textile industries in India. The study explores book value per share and dividend per share as the most important factors of market price in both industries. Malhotra and Prakash (2001) inspected the market value factors of the 'A' group and 'B' group shares of the Indian stock market through 1989-90 to 1998-99 by utilizing correlation and regression analysis. The study resolved that the price behavior of a 'B' group share is primarily resolute by dividend per share, earnings per share, book value per

share, P/E ratio and market value to book value ratio. Sharma and Singh (2006) had taken data from 160 Indian corporations amid 2001 and 2005 and examined the earnings per share, dividend per share, price-earnings ratio, book value per share, and firm size are factors of share prices. Islam et al. (2014) offered empirical indication on how EPS affects share price variation. They possessed and examined 22 scheduled banks' yearly data and initiate that share price does not change as fast as the EPS change. Mohanty (2002) found that size, price-to-book value, market leverage, and the earnings-to-price ratio were highly correlated with security returns in the Indian equity market. Pandey and Sehgal (2016) observed that penny stocks negatively affect the size effect in the case of the Indian Stock Market. Kusmayadi et al. (2018) expressed that partly net profit margin, price to book value, and debt to equity ratio had an important negative impact on stock returns on LQ45 Company on the Indonesia Stock Exchange, as well as net profit margin, price to book value and the debt-to-equity ratio has no important impact.

III. Data and Methodology

3.1 Sample and Study Period

The present study employed all listed companies on India Limited's National Stock Exchange (NSE). In this sample, include year-wise all listed companies of NSE India During 2005 to 2019. The present study includes companies in 2005-290, 2006-439, 2007-565, 2008-647, 2009-614, 2010-738, 2011-837, 2012-810, 2013-826, 2014-825, 2015-975, 2016-983, 2017-1047, 2018-1097 and in 2019-1069 companies. This sample contains 64 percent of the total listed companies on NSE. We have not included those companies in the study whose companies return and other data are abnormal and whose data is missing in the database. The Nifty50 is a leading market index of the Indian equity market incorporated as a benchmark portfolio to represents the market. The fundamental and price data regarding benchmark portfolio and sample firms have been procured from the Capitaline database. The yield on the Indian government's 91-day treasury bills is integrated as a risk-free rate of return, and this information is gathered from database of Indian economy section of the Reserve Bank of India's website (www.rbi.org.in). Overall, an effort has been made to use the sample data that rightly resembles the whole market. This is a descriptive analysis of NSE-listed firms is from July 2005 to December 2019 in the Indian stock market. This period has witnessed two different ideological governments' regimes and the global financial crisis.

3.2 Methodology

The study evaluates the Risk-Return performance of all NSE-listed companies during the last fifteen years (July 2005 to June 2019). All the selected companies have been dissected yearly. We calculate return by using the adjusted closing price of each company. Then all the sample companies are shorted based on return (high return to low return); after that, all the sample stocks are divided into deciles, *i.e.,* D1 to D10. Decile 1 (D1) presents the top 10 percent companies of every year based on a high return. Similarly, decile 10 (D10) presents the bottom 10 percent of every year based on the lowest return. Each decile had been averaged from July 2005 to June 2019. The entire study is divided into three phases, *i.e.,* phase 1 (July 2009 to June 2009), phase 2 (July 2009 to June 2014), and phase 3 is (July 2014 to June 2019). Further, each average decile has been averaged for each phase. A similar process was applying to the risk and other variables of the study.

3.3 Variables used in the study

Return

Capital Profit / Loss $= \frac{Pt-(Pt-1)}{(Pt-1)}$

Where:
Pt = Share Price of the recent period.
Pt-1 = Share Price of earlier period.

Risk

The average risk measured by the standard deviation of holding period of the study.

Size of firms

The stature of company performs significant role in the investment criteria. Usually, larger corporations offer great investment opportunities to investors than smaller ones. The shares of larger corporations are passionately traded and they offer greater liquidity and marketability to investors. Therefore, the attraction to buy shares of large corporations increases the market value of its shares. The size of company can be measured in a number of ways, e.g. Through turnover, paid-up-capital, capital employed, total assets, net sales, market capitalization, etc. in the present study size is measured by market capitalization of the firms and data of market capitalization of all firms are collected from CMIE Prowess database.

Earnings per Share

The term earnings per share (EPS) presents the part of a company's earnings, net of taxes and preferred stock dividends, allocated to each share of common stock.

$$EPS = \frac{Net\ Income - Dividend\ on\ Preferred\ Share}{Average\ Outstanding\ Stocks}$$

Net Profit Margin

Net Profit Margin is a portion of corporation's profitability from sales after taking into account all costs and income taxes.

$$NPM = \frac{Net\ Income\ After\ Tax}{Sales}$$

Return on Capital Employed

The return on capital employed (ROCE) is a measure of how much money a firm makes from the money it invests. The efficiency and profit-generating ability of a company's capital investments are measured by ROCE. Return on Capital Employed (ROCE) is determining the efficiency and profitability of a company's capital investments.

$$ROCE = \frac{EBIT}{Capital\ Employed}$$

Where:

EBIT= Earnings before Interest and Tax

Capital employed = Total Assets – Current Liabilities

Return on Assets

Return on assets, or ROA, measures how profitable a company is by comparing net income to total assets.

$$ROA = \frac{Net\ Profit}{Total\ assets}$$

Price to book value

The price-to-book ratio (P/B ratio) is used by Companies to compare a firm's market capitalization to its book value.

$$P/B\ ratio = \frac{Market\ Price\ Per\ Share}{Book\ value\ per\ share}$$

IV. Results

Table 1: Risk-Return performance of equity shares listed on NSE. (July 2005 to June 2009).

Decile	Average Market. Cap.	Cum. Average Return	Cum. Maximum Return	Cum. Minimum Return	Average Return	Average Risk	Average Maximum Risk	Average Minimum Risk	EPS (Rs.)	NPM (%)	ROCE (%)	ROA (%)	P/BV (%)
D 1	1837.56	151.89	575.28	89.19	12.89	35.96	176.00	9.49	18.07	15.67	11.54	7.22	2.73
D 2	3648.06	73.78	88.62	62.31	6.15	20.35	39.95	6.50	26.40	15.56	15.43	9.26	3.19
D 3	5464.46	53.12	61.98	45.66	4.43	18.06	35.66	7.48	23.62	13.95	14.21	8.91	2.55
D 4	3322.42	39.18	45.42	33.15	3.27	17.43	32.08	6.61	21.17	11.88	13.69	8.40	2.75
D 5	6246.98	28.34	33.03	24.11	2.36	15.70	30.00	5.46	20.79	15.09	13.78	8.82	3.64
D 6	5448.95	18.88	23.98	13.93	1.57	15.91	35.76	6.59	23.60	17.84	14.46	9.12	2.78
D 7	4421.05	7.92	13.83	2.26	0.66	14.98	30.17	5.52	17.40	14.90	12.02	7.87	3.73
D 8	3621.63	-4.04	2.02	-10.54	-0.34	15.68	34.65	6.40	24.90	15.62	12.40	8.14	2.58
D 9	4669.73	-18.36	-11.10	-14.63	-1.53	15.11	32.99	6.53	20.33	13.54	13.37	8.35	2.86
D 10	3678.85	-46.66	-2.67	-114.99	-3.89	16.34	33.11	8.37	15.33	11.48	11.34	6.96	2.76
Nifty Cumulative Return					98.36								
Nifty Average Return					2.04								
Nifty Average Risk					9.57								

Note: EPS= Earnings Per Share, NPM= Net Profit Margin, ROCE= Return on Capital Employed, ROA= Return on asset, P/BV= Price/book Value.

Table 1 presents the return behavior of NSE-listed stocks, divided into 10 equal-weighted portfolios on the basis of maximum return to minimum return from July 2005 to June 2009. The cumulative return of D1 is 151.89 percent and the maximum return generated by a firm in the portfolio is 575.28, and the minimum return is 89.19 percent. On the other hand, the market portfolio NIFTY 50 return is 98.36. The average return of decile one i.e. top 10 percent of sample stocks is 12.89, and the average risk measured by the standard deviation of holding period is 35.96 percent, whereas the average return of Nifty 50 is 2.04 percent, and the average risk is 9.57 percent. Similarly, the market cap of D2 is 3648.06 crores, but the return of D2 is much less than that of D1, which is almost three times the average return of Nifty. Similarly, the cumulative return of the first five portfolios is higher than the Nifty, but there is not much difference in their average return. The study also finds that the risk of the portfolio and nifty, then the risk of the winner portfolio is more than the average risk of the nifty but there is not much difference between the average risk of the loser portfolio and the winner portfolio. Similarly, the study explores loser portfolios D8, D9, and D10 then their return is very less than Nifty, but if the risk of the portfolio is compared with the average risk of Nifty, then the study finds that there is not much gap in the risk of all the portfolios except D1. But the average risk of all portfolios is almost two times as compared to the nifty. The table explores the size effect in the Indian stock market then the study finds that the small-capitalization firm generates a high return in comparison to large market capitalization firms. Basic earnings per share (EPS) tells investors how much of a firm's net income was allotted to each share of common stock. The study shows that there is not much difference in the basic EPS of all the portfolios, Which shows that basic EPS does not affect the share price, and the study verifies the results of Islam, Md. R.(2014) found share price does not move as fast as the EPS move. The net profit margin measures how much net income or profit is generated as a percentage of revenue. The study explores not any big gap between all the portfolio's (winner and loser portfolio) net profit margin, and companies use the price-to-book ratio to compare a firm's market capitalization to its book value, the results indicate that the PB ratio of all the portfolio is 2.5 to 3.7. The study confirms the results of kusmayadi, et al. (2018) Net Profit Margin, Price to Book Value, and Debt to Equity Ratio have no important effect on Indonesia stock exchange.

Table 2: Risk-Return performance of equity shares listed on NSE. (July 2009 to June 2014).

Decile	Average Market. Cap.	Cum. Average Return	Cum. Maximum Return	Cum. Minimum Return	Average Return	Average Risk	Average Maximum Risk	Average Minimum Risk	EPS (Rs.)	NPM (%)	ROCE (%)	ROA (%)	P/BV (%)
D 1	1644.38	129.23	818.71	70.28	10.77	26.84	230.46	5.89	17.71	21.19	9.96	6.78	2.38
D 2	4550.82	57.31	69.89	47.81	4.77	14.12	33.75	5.31	22.81	16.12	14.22	8.66	2.79
D 3	5905.25	40.41	47.68	34.37	3.37	12.74	30.20	4.42	26.43	19.40	11.62	7.54	2.54
D 4	6620.00	28.25	34.25	22.38	2.35	11.98	27.83	4.67	22.55	22.94	11.23	7.20	2.29
D 5	5649.91	17.44	22.29	12.40	1.45	11.85	28.03	4.10	22.03	18.54	10.48	6.75	2.02
D 6	9843.80	8.52	11.28	2.95	0.63	11.24	26.49	3.94	19.11	4.49	10.57	6.46	1.86
D 7	8149.60	-2.11	2.88	-7.82	-0.18	10.87	25.44	3.50	21.47	16.16	10.94	6.77	2.13
D 8	4625.95	-13.80	-7.96	-20.33	-1.15	10.97	25.23	4.80	16.83	27.15	7.92	5.85	2.12
D 9	5645.46	-27.97	-20.40	-37.40	-2.33	11.49	27.65	4.05	19.12	17.06	10.64	6.27	1.95
D 10	6579.90	-62.91	-37.61	-161.05	-5.24	14.02	32.88	4.54	17.60	10.75	9.14	5.95	2.33
Nifty Cumulative Return	57.4												
Nifty Average Return	0.95												
Nifty Average Risk	5.3												

Note: Note: EPS= Earnings Per Share, NPM= Net Profit Margin, ROCE= Return on Capital Employed, ROA= Return on asset, P/BV= Price/book Value.

Table 2 explores the return behavior of stocks listed in the National Stock Exchange, divided into 10 equal-weighted portfolios on the basis of maximum return to minimum return from July 2009 to June 2014. The cumulative return of D1 is 129.9 percent which is much more than the Nifty cumulative return i.e. 57.4 percent. The cumulative maximum return for D1 is 818.71 percent and the cumulative minimum return is 70.28 percent

which shows a huge gap between minimum and maximum levels. In the case of average return, it is 0.95 percent for nifty, and for D1 it is 10.77 percent. The whole table shows that D1 has the smallest market capitalization and producing the highest return in comparison of all portfolios from D2 to D10 and even in comparison of Nifty. Whereas D6 has the largest market capitalization which is 9843.80 percent and producing a very low average return which is 0.63 percent and it is lower than the average return of nifty and all portfolios below D6 i.e. D7 to D10 are loser portfolios and producing negative returns. The Average risk of all portfolios is ranging between 10.87 percent to 26.84 percent which is much more than nifty average risk i.e. 5.3 percent. So, it shows that all portfolios whether winner or loser all has more risk than nifty. Portfolio D6 has the largest market capitalization and its average risk is 11.24 percent whereas portfolio D1 has the smallest market capitalization and its average risk is 26.84 percent which shows that small market capitalized portfolios have high risk and high return. In the case of return on capital employed it ranges from 7.92 percent to 14.22 percent. D2 has a maximum return on capital employed and D8 has a minimum return on capital employed. D9 is a loser portfolio still it has somewhat more return on capital employed than the minimum value which is 7.92 percent. The return on capital employed is not fluctuating more it is ranging between 7.92 to 14.22 percent and it has no significant effect on return like as in phase 1, the net profit margin and returns on assets both had no significant effect on portfolio return.

Table 3: Risk-Return performance of equity shares listed on NSE. (July 2014 to June 2019).

Decile	Average Market. Cap.	Cum. Average Return	Cum. Maximum Return	Cum. Minimum Return	Average Return	Average Risk	Average Maximum Risk	Average Minimum Risk	EPS (Rs.)	NPM (%)	ROCE (%)	ROA (%)	P/BV (%)
D 1	1837.56	151.89	575.28	89.19	12.89	35.96	176.00	9.49	18.07	15.67	11.54	7.22	2.73
D 2	3648.06	73.78	88.62	62.31	6.15	20.35	39.95	6.50	26.40	15.56	15.43	9.26	3.19
D 3	5464.46	53.12	61.98	45.66	4.43	18.06	35.66	7.48	23.62	13.95	14.21	8.91	2.55
D 4	3322.42	39.18	45.42	33.15	3.27	17.43	32.08	6.61	21.17	11.88	13.69	8.40	2.75
D 5	6246.98	28.34	33.03	24.11	2.36	15.70	30.00	5.46	20.79	15.09	13.78	8.82	3.64
D 6	5448.95	18.88	23.98	13.93	1.57	15.91	35.76	6.59	23.60	17.84	14.46	9.12	2.78
D 7	4421.05	7.92	13.83	2.26	0.66	14.98	30.17	5.52	17.40	14.90	12.02	7.87	3.73
D 8	3621.63	-4.04	2.02	-10.54	-0.34	15.68	34.65	6.40	24.90	15.62	12.40	8.14	2.58
D 9	4669.73	-18.36	-11.10	-14.63	-1.53	15.11	32.99	6.53	20.33	13.54	13.37	8.35	2.86
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Table 3 represents the return behavior of stocks listed in the National Stock Exchange, divided into 10 equal-weighted portfolios on the basis of maximum return to minimum return from July 2014 to June 2019. The average return of D1 is 9.07 and an average return of nifty is 0.9. It shows that D1 has much more average returns. Average return ranges from -0.06 to 9.07 and portfolio D1 has maximum average return whereas portfolio D6 has minimum average return. In the case of market capitalization, portfolio D3 has the largest market capitalization and producing an average return of 2.77 it is somewhat more than the nifty average return and portfolio D1 has the smallest market capitalization and producing the maximum average return. The average risk of all portfolios ranging from 10.91 to 23.77 shows higher fluctuation whereas the average risk of nifty is 3.77 so all portfolios are riskier than nifty. D6, which is a loser portfolio, has minimum risk, and D1, which is the winner portfolio has maximum risk. So, it is clearly seen that portfolios of small market capitalization have more risk as well as more return in comparison to portfolios that have large market capitalization, phase 1 and phase 2 also show this same thing. In a matter of price to book ratio, it is seen that portfolio D1 has the lowest value i.e. 2.37, and portfolio D2 has maximum value i.e. 3.68. It has no significant impact on the return. Similarly, net profit margin, return on assets and return on capital employed, three also has no significant effect

on return. As in Phase 1 and Phase 2, phase 3 also shows similar results that these factors have no significant effect on return. The study confirms the results of Mohanty (2002) show that the small firms generated an annualized excess return of 70 percent over the large firms.

V.   Conclusions

The present study analyzed the risk and return behavior of all NSE listed firms from 2005-2019. The entire study is divided into three phases, in the first phase using data from July 2005 to June 2009, and second phase include data from July 2009 to June 2014 and the third phase we include the data from July 2014 to June 2019. The study finds a significant size effect in all the phases of entire study period. The results revealed that the risk of the winner portfolio is more than the average risk of the nifty but very little difference has been noticed between the average risk of the loser portfolio and the winner portfolio. Similarly, the cumulative return of the first five portfolios (D1 to D5) is higher than the Nifty. The study also examined the determinants *i.e.* earnings per share, net profit margin, return on capital employed, return on assets and price to book value and found that there is no substantial effect of these determinants on Indian equity market.

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