

FINANCE

“A STUDY ON SHORT RUN AND LONG RUN ANALYSIS OF IPOS LISTED IN 2007 TO 2011”

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INTRODUCTION

Capital markets serves as an intermediary between individuals, government and businesses. It channelizes the surplus funds of investors to the corporate. The Indian Capital Market deals in long term securities of government and corporate, which helps the two entities to raise money from public (Deodhar & Abhyankar, 2007). Capital market constitutes operation in the new issues and stock market. New issues made by companies form primary market and trading in the existing securities confer to secondary market (Avadhani, 1997). IPOs refer to the fresh, first hand equity offered by corporate to investors. Investors invest in the IPOs for varied reasons such as availing listing gains and maximizing wealth. Present paper tries to examine the listing gains derived by the investor; profit booking by the intraday traders and benefit of holding shares for long term was also analyzed in the paper. The paper analyzes whether IPOs are under-priced or over-priced.

RESEARCH OBJECTIVES

To identify the short term return in terms of listing gains and intra day gains available to subscribers of IPOs with respect to the duration, from 2007 to 2011.

To study the long term returns available to subscribers of IPOs with respect to the duration from, 2007 to 2011.

To access the performance of the IPOs and identify the overall sentiment of the market thereby commenting on the pricing of the IPOs listed during 2007 to 2011.

RESEARCH METHODOLOGY

Descriptive research design was adopted for the study as the research had been based on secondary data. The sample in this study includes the fresh equity issues offered through the book built route on the NSE. A sample (unit or element) of 217 companies which came out with 100 percent book built IPO and got listed on National Stock Exchange (NSE) from the period (sample duration) commencing from 2007 to 2011 was taken as primary dataset for the short run analysis. The companies offering follow on issue or IPOs which was offered in 2011, but got listed in 2012 or IPOs which only got listed on Bombay Stock Exchange (BSE) and not on NSE, were excluded from the data set. Non-probability purposive sampling technique was used for deciding the appropriate sample size. The list of 217 companies, its issue size, its price range, its grading and its offer price was downloaded from the website of NSE. The data regarding the closing date of the closure of IPO was downloaded from IndiaIPO website. Approximately 1,000 bhav copies were downloaded from NSE's website, to obtain the opening and the closing prices on the day of IPO listing and the next day, of the listing of the IPO. For long run the prices of shares after listing, were taken intermittently in the trenches after every 3 months, 6 months, 12 months, 24 months, 36 months, 48 months and 60 months, this was the primary reason for variation in sample size in the long run. The sample size varied from 216 to 5, in the long run estimation of returns. Nifty index values were retrieved from Capitaline database and Ace Analyzer database. Closing Nifty index on the last of the offer, opening value of Nifty index on the day of listing and closing value of Nifty index on the day of listing was obtained for short run and for long run; the Nifty value was taken intermittently.

The price performance of IPO was evaluated for the short run i.e. returns received on the day of listing and on the next day of listing. Considering the study of Kumar (2007), as a base of the present study, the return realized over the period from the offering of the shares to the first trading day on NSE, called as offer- to- close return have been computed. The work of Barry and Jennings (1993), as referred and applied

by Kumar (2007) in his study the same have been applied in this study too. The short run analysis was examined by offer-to-open returns for obtaining a reasonable idea of how much IPOs gained or lost on opening trades, as well as intra day return on the listing day, which is defined as open -to-close returns on the day of listing. Similar returns are analyzed for the next intraday (second day after the listing day). Buy and hold market adjusted return (BHAR) and monthly market adjusted returns (MMAR) were computed for evaluating the long run performance of the IPO. Considering the study of Kumar (2007) as the base of the study, the average annualized return was calculated.

Simple returns, market adjusted returns and excess returns were computed to know the performance of the IPOs. Simple returns (R_{it}), Market Adjusted Returns (R_{mt}) and Excess Returns ($ER_{,,}$) were calculated with the following formula.

$$R_{it} = \frac{(P_{it} - O_i)}{O_i} \times 100 \quad R_{mt} = \frac{(I_t - I_0)}{I_0} \times 100 \quad ER_{,,} = R_{it} - R_{mt}$$

P_{it} represents the opening or closing price of stock 'i' at time 't' i.e. at the time of listing.

O_i represents the offer price of the stock 'i'.

I_t represents Nifty index closing or opening value on the day of 't' i.e. on the day of listing.

I_0 represents closing level of Nifty on the last day of the IPO offering.

Descriptive research design had been used for the study. At univariate level descriptive statistics like mean, 5% trim mean, median, SD had been applied for computing the significance of returns on the listing day and the next day. At multivariate level inferential statistics was applied. Inferential statistic like cross sectional 'T' statistic had been used to test the hypothesis on significance of the samples mean return. Other statistical test that was applied was Independent T-test, linear regression, cross sectional regression. Various secondary sources of offline data like newspaper, journals, books and online research papers and periodicals had also been studied for better interpretation of the computed values. Trend

analysis was performed to predict the future value of Nifty indices. The collected data was processed for analysis by editing, coding and entering it into computer software- Statistical Package for Social Scientists (SPSS 17) and Microsoft excel programmes.

FINDINGS AND DISCUSSION ON SHORT RUN ANALYSIS OF IPOs (2007 - 2011)

Table 1 gives a details of the IPO activity from 2007-11.

TABLE 1: SNAPSHOT OF IPO ACTIVITY DURING THE YEAR 2007-2011

Year	Nos. of Issues	IPOs taken for Study
2007	87	83
2008	41	30
2009	22	20
2010	75	58
2011	41	26
Total	266	217

(Source: Author's Compilation)

SIMPLE RETURNS ANALYSIS

Simple returns (R_{it}) are calculated to capture the market movements during the period between offer closures to listing. R_{it} measures whether an investor gained or lost by buying the shares during the IPO at the offer price and selling at the prevailing price on the listing day. If R_{it} was positive one may infer that the issue was under-priced. If R_{it} was negative one may understand that the issue was over-priced. If R_{it} was zero, it meant that the issue was aptly priced (Kumar, 2007). Work of Kumar (2007) was extended by comparing the offer price with opening price as well as closing price in order to identify the impact on investors. For the primary dataset of 2007 to 2011, when average percentage R_{it} was computed by taking the offer (opening) price and listing price of the 217 IPOs under study, one can obtain the categorization of IPOs in the category of overpriced, under-priced and aptly priced. The results of the average percentage R_{it} with offer price and opening price is described in table 2; results of the average percentage R_{it} with offer price and closing price is described in table 3.

TABLE 2: AVERAGE % SIMPLE RETURNS (R_{it})*

Number of IPOs	Average % R_{it}	Interpretation	Impact on Investors
42	-8.85%	Over-Priced	Winner's Curse
161	22.49%	Under-Priced	Boon
14	0.00%	Aptly Priced	Neutral

*Note: Offer Price and Opening Price is used in computation of R_{it}

(Source: Author's Computation),

TABLE 3: AVERAGE % SIMPLE RETURNS (R_{it})*

Number of IPOs	Average % R_{it}	Interpretation	Impact on Investors
82	-20.56%	Over-Priced	Winner's Curse
134	40.91%	Under-Priced	Boon
1	0.00%	Aptly Priced	Neutral

*Note: Offer Price and Closing Price is used in computation of R_{it}

(Source: Author's Computation)

There are two ways in which IPOs can be priced that is fixed price and book built. From the data obtained out of 217 book built IPOs it may be inferred that in overpricing, if the stock is offered to the public at a higher price than what the market will pay, then the stock tends to fall in value on the first day of trading and it may eventually lose its marketability and value in future. For an overpriced issue underwriters too have a trouble in selling the shares and meeting their commitments. Under-pricing of IPO generates additional interest in the stock when it, first becomes publicly traded. This can lead to significant gains for investors. From the perspective of company's underpricing an IPO results in "money left on the table"- lost capital that could have been raised for the company had the stock been offered at a higher price (IPO, n.d.).

MARKET ADJUSTED RETURN ANALYSIS

The price observed in the market on the listing day may vary from the offer price. This may result due to overall market movements. Computations of market adjusted return (R_{mt}) of the IPOs are made for the same period. To compute the market adjusted return, adjustment is first made by calculating the returns on the market index (Nifty) during the same period. If R_{mt} was positive it was considered that the market on the whole has moved up. If it was negative it may be measured that there was decline in the overall market

and if it was equal to zero it may be accomplished that market remained unchanged during the interval between IPO offering to its listing (Kumar, 2007). Work of Kumar (2007) was extended by comparing the opening Nifty index and closing Nifty index on last day of IPO offering and closing Nifty index and closing Nifty index on last day of IPO offering in order to identify the overall market sentiment. The result of average R_{mt} with opening Nifty index and closing Nifty index on last day of the IPO offering is mentioned in table 4 and the result of average R_{mt} with closing Nifty index and closing Nifty index on last day of the IPO offering is mentioned in table 5.

TABLE 4: AVERAGE % MARKET ADJUSTED RETURNS (R_{MT})*

Number of IPOs	Average % R_{mt}	Interpretation	Market Sentiment
105	-4.82%	Decline in overall Nifty Index	Bearish
112	4.52%	Overall Nifty Index has gone up	Bullish

**Note: Opening Nifty Index and Closing Nifty Index on last day of IPO Offering is used in computation of R_{mt}*

(Source: Author's Computation)

TABLE 5: AVERAGE % MARKET ADJUSTED RETURNS (R_{MT})*

Number of IPOs	Average % R_{mt}	Interpretation	Market Sentiment
103	-5.18%	Decline in overall Nifty Index	Bearish
143	7.32%	Overall Nifty Index has gone up	Bullish

**Note: Closing Nifty Index and Closing Nifty Index on last day of IPO Offering is used in computation of R_{mt}*

(Source: Author's Computation)

From Table 4 and Table 5 it may be inferred that there was a sharp fall in the market index Nifty at the time of closure of the trade. The market index Nifty had improved by the end of the closure of the day. Overall upward movement in the Nifty index indicated a bullish sentiment in the market at the time of majority of the listings of IPO. Anticipation of listing gains and purchasing of value buy stocks (from secondary market) on the day of listing could be a valid reason for positive sentiments in the market.

EXCESS RETURN ANALYSIS

On deducting the market returns from the IPO's returns, the resultant returns so obtained was called

excess return (ER,,). If ER was positive one may deduce that the issue was under-priced, after adjusting for the market movements in the intervening period. Negative value of ER indicated that the issue was overpriced, after adjusting for the market movements in the intervening period. If ER was equal to zero, it may be inferred that the issue was fairly priced, after adjusting for the market movements (Kumar, 2007). The result of the average ER was represented in the Table 6.

TABLE 6: REPRESENTATION OF EXCESS RETURNS (ER,)

Number of IPOs	Average ER	Interpretation
86	-0.15	Over-Priced
154	0.40	Under-Priced
3	0.00	Fairly Priced

(Source: Author's Computation)

Average Return Analysis on Listing Day and Next Day of Listing

As a part of short run analysis, the price performance of IPOs on the listing day and the next day is presented below.

TABLE 7: REPRESENTATION OF RETURNS OF SHARES ON LISTING DAY AND NEXT DAY

Parameters	Listing Day			Next Day		
	Offer-Open	Offer-Close	Open-Close	Offer-Open	Offer-Close	Open-Close
Mean (Listing Price < Offer Price)	-58.24%	-37.20%	-25.60%	-31.76%	-35.38%	-11.28%
Mean (Listing Price > Offer Price)	33.63%	68.94%	56.75%	72.33%	71.43%	19.20%

(Source: Author's Computation)

It was observed that some of the shares on the listing day listed at a lower price compared to their respective offer price, which represented a negative return. From table 7 it may be inferred that on the listing day, the average return with respect to the difference between offer price and open price was found to be (-) 58.24%. On comparison of offer-close price the mean return was found to be (-) 37.20%, which means that the share price continued to go down in comparison to the offer price and listing price. On comparison with listing day's open and close

price, the mean return was (-) 25.60%, which meant that the price did not improve in the first day trading session, it was still low when compared to the offer price and open price. The companies who's IPOs were listed at a lower price on the browses, indicated that investors had a bearish sentiment towards the companies. The downfall in the price of the share on the next day of the listing had considerably reduced when compared to the offer price. The offer-open price stood at (-) 31.76%, offer-close was (-) 35.38% and open-close was (-) 11.28%.

It was observed that some of the shares on the listing day listed at a higher price compared to their respective offer price, which represented a positive return. From table 7 it may be inferred that on the listing day, the average return with respect to the difference between offer price and open price was found to be 33.63%. On comparison of offer-close price, the mean return was found to be 68.94%, which meant that the share price increased in comparison to the offer price and listing price. On comparison with listing day's open and close price, the mean return was 56.75%, which meant that the price improved when compared to the offer price but on comparison with open price it slightly went down, as the open-close was 56.75% which was greater than 33.63%, but lower than 68.94%. The companies who's IPOs were listed at a higher price on the browses, indicated that investors had bullish sentiment towards the companies. The upward movement in the price of the share on the next day of the listing had considerably increased when compared to the offer price. The offer-open price stood at 72.33%, offer-close was 71.43%. Unfortunately on the next day of the listing the open-close was just 19.20%, which was quite lower than offer-open at 33.63%. This indicated that the listing gains have been discounted and the momentum of drastic upward movement had reduced.

COMPLETE ANALYSIS OF IPO RETURNS ON LISTING DAY AND NEXT DAY

The statistical parameter for studying the short run analysis of IPO on the day of listing as well as on the next day of listing was applied in this paper in connotation to the fundamental work of Kumar (2007). The average IPO return of both the days i.e. on

listing day and on the next day of the listing is presented below in Table 8.

TABLE 8: OVERALL ANALYSIS OF THE IPO RETURNS ON THE LISTING AND ON THE NEXT DAY OF LISTING

Particulars	Listing Day			Next Day		
	Offer -Open	Offer- Close	Open-Close	Offer -Open	Offer- Close	Open-Close
Mean	16.76%	21.37%	4.61%	23.68%	25.27%	1.59%
5% Trim Mean	14.36%	18.51%	3.99%	19.96%	21.96%	1.09%
Median	3.68%	5.00%	-0.85%	5.85%	5.48%	-0.05%
SD	85.47	115.69	68.42	116.44	118.94	28.46

It may be observed that on an average IPOs listed with a premium of 16.76% over the offer price and the median premium was around 3.68%. On the listing day, the listed IPO closed at a premium of 21.37% over the offer price and the median premium was around 5.00%. This implied that the average premium and median premium had improved during the first trading session itself, which indicated positive sentiments, bullish trend and a high level of upward volatility in the market. The level of volatility was further confirmed by studying the SD which was 85.47 and 115.69 during the open-offer and close-offer respectively. It also showed the bullish trend in the market. To report for the possibility of outlier effect, average trimmed mean based on opening return and average trimmed mean based on closing return was calculated. 5% Trimmed mean was computed by ignoring 5% or 11 observations extremely high and low in data points. On comparing the average trimmed opening returns and closing returns, it was found that the opening returns marginally decreased to 14.36% and the closing returns decreased to 18.51%, to thereby confirming that under-pricing of IPOs was not caused by a few outliers. This indicated that the under-pricing of IPOs was purely due to the price discovery on account of book built mechanism, which favoured the investor to derive a positive gain.

CROSS SECTIONAL T-STATISTICS ANALYSIS

Whether the average returns were statistically significant or not were studied, by constructing a cross-sectional 'T' statistic. One sample T-test was applied for verifying the statistical significance with respect to offer open, offer close, open close on listing day as well as next day. It is illustrated through following hypothesis.

H_{01} : There is no significant difference in the (offer-open, offer-close and open-close) mean returns of the IPOs on the listing day or next day of listing.

H_{11} : There is a significant difference in the (offer-open, offer-close and open-close) mean returns of the IPOs on the listing day or next day of listing.

TABLE 9: COMPUTATION OF 'T' STATISTICS ON THE LISTING AND ON THE NEXT DAY OF LISTING

Null Hypothesis (H_0)*	$\mu = 26.35\%$	$\mu = 27.26\%$	$\mu = -0.77\%$	$\mu = 0.03\%$	$\mu = 0.64\%$	$\mu = 0.67\%$
Alternate Hypothesis (H_1)	$\mu \neq 26.35\%$	$\mu \neq 27.26\%$	$\mu \neq -0.77\%$	$\mu \neq 0.03\%$	$\mu \neq 0.64\%$	$\mu \neq 0.67\%$
t	1.73	2.43	2.32	9.05	1.73	1.45
p-value	0.09>0.05	0.00<0.05	0.00<0.05	0.00<0.05	0.00<0.05	1.45>0.05
Decision Rule	H_0 is not rejected	H_0 is not rejected				
Analysis	Statistically not Significant	Statistically not Significant				
N	217	217	217	217	217	217
N>0	162	135	100	135	140	105

(Source: Author's Computation)

* Note : The μ values in all the cases are based on the previous similar study undertaken by Kumar (2007).

The 'T' statistic and corresponding 'p' values, indicated that the listing day excess returns were statistically significant. The last row representing $N>0$, indicates that out of 217 IPOs sampled 162 IPOs listed with a positive return while the rest opened at a discount to the offer price. On the listing day a noteworthy point was found that, all those 162 IPOs which listed at a premium did not close at premium at the end of the day. In fact 27 IPOs which listed at a premium closed at a discount (when compared to the offer price), on the listing day. The intraday returns were also examined. Intra day refers to a position where the investor buys the shares at the opening price and sells by the end of the day at the closing price. It was observed that there was an average positive return of 4.61%. The corresponding 'T' statistic explained that the return was statistically significant. It can be inferred that the IPOs listing do provide economically considerable trading opportunities for a day trader.

The second day's (next day after the listing day) return analysis showed that all the IPO investors gained on

the listing day's performance. 23.68% (refer table 8) was the percentage average returns on the next day of the listing with respect to the open price of the next day. At the closure of the next day of the listing the return improved to 25.27% (refer table 8), with a SD of 116.44 to 118.94 (refer table 8). If any trader buys the IPOs on the listing day at the opening or closing price, with an intention of profiting from liquidating the position on the next day at opening or closing levels, on the second day they will earn a meager return of 1.59% (refer table 8). The corresponding 'T' statistic explained that the return was statistically insignificant. Moreover, the median return was also found to be -0.05% (refer table 8). It was further observed that out of 162 IPOs which listed at a premium on the listing day, only 105 IPOs were found to be traded at a premium on the next day of listing, at the closure of the trade. This indicated high level of volatility prevalent in the secondary market, which was due the presence of intraday traders, speculators and arbitrageurs. These players do offer momentum to the prices of the stock.

INDEPENDENT T-TEST ANALYSIS

In order to check the significant difference in the opening and closing returns on the day of listing with respect to independent T-Test the normality of the data was checked by superimposing of normal curve on the histogram which is given below.

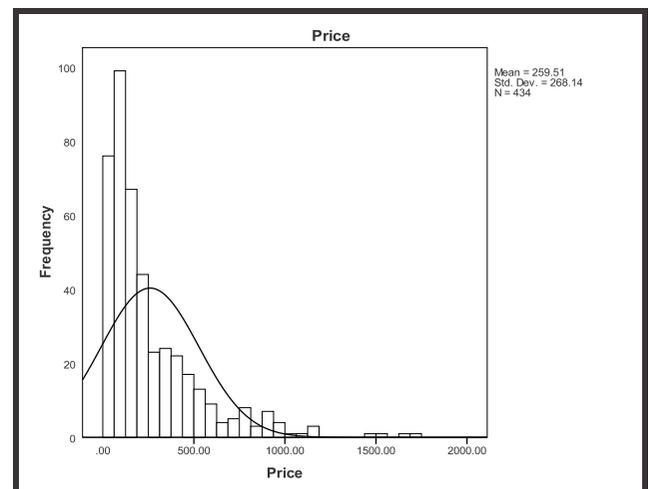


Figure 1 : Graph to check normality

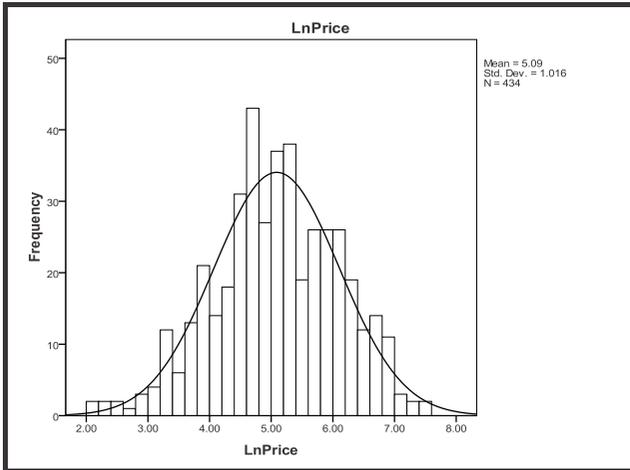


Figure 2 : Graph representing normality

From *figure 1* it can be observed that the distribution is not a normal distribution. For obtaining normal distribution natural log function was applied on the data and from *figure 2* it was observed that now the distribution becomes a normal distribution. Independent T-test was applied to check the difference in opening and closing returns.

H₀₂: There is no significant difference in opening and closing returns on the day of listing.

H₁₂: There is a significant difference in opening and closing returns on the day of listing.

TABLE 10: TEST STATISTICS FOR INDEPENDENT T-TEST

	Levene's Test for Equality of Variances		T-Test for Equality of Means			
	F	Sig.	T	df	Sig. (2-tailed)	
LnPrice	Equal variances assumed	0.06	0.81	-0.22	432	0.83
	Equal variances not assumed			-0.22	431.89	0.83

(Source : SPSS Output)

From the above *table 10* it may be inferred that at 95% level of confidence Levene's test of equality of variance was found to be significant (i.e. 0.81>0.05). Once the equality of variances was proved to be significant at 5 percent level of significance, the two tailed test represented the p-value 0.83 > 0.05 which

implied that H₀ cannot be rejected i.e. there is no significant difference in the opening and closing returns on the day of listing, was accepted. Descriptive statistics further revealed that the mean opening returns was 5.08, which marginally improved to 5.10 as the closing returns.

LINEAR REGRESSION ANALYSIS

In order to know whether the average initial IPO returns based on the closing prices were dependent on the opening returns (based on the listing day) or not a regression analysis was run. The opening returns are deterministic variable i.e. independent variable which is denoted as X. Closing returns are dependent variable which is denoted by Y.

H₀₃: Closing returns do not depend on opening returns.

H₁₃: Closing returns depend on opening returns.

TABLE 11 MODEL SUMMARY

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.81 ^a	0.66	0.655	68.08
a. Predictors: (Constant), (X)			

(Source: SPSS Output)

From *table 11*, the significant correlation with R = 0.81, which showed that there was correlation between predicted returns based on closing price and actual one. As the value of r is 0.81 > 0.70 which indicated that there was a positive strong correlation between the two variables, further it was also known that the correlation was significant. R-Square provided an indication of the explanatory power of the regression model. R-Square was simply the percentage of variance in the dependent variable explained by the collection of independent variable. Approximately 65.5% of variation in return based on the closing price was dependent on the returns based on the opening price.

TABLE 12 ANOVA^B

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1894257.13	1	1894257.13	408.67	0.00 ^a
Residual	996573.74	215	4635.23		
Total	2890831.87	216			
a. Predictors: (Constant), (X)					
b. Dependent Variable: (Y)					

(Source: SPSS Output)

Sig. refers to a “significance test”, which was another of way saying statistical hypothesis test. In other words number of columns labeled “Sig” was p-values and therefore it gave the results of a hypothesis test. In this case, the p-values refer to a test of the entire model (i.e. the entire collections of independent variables) as a whole. From *table 12* it may be inferred that the p-value $0.00 < 0.05$, so H_0 is rejected and H_1 is accepted, i.e. Closing returns depend on opening returns, was accepted.

TABLE 13 COEFFICIENTS ^A

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	6.52	5.03			1.29	0.19
(X)	1.09	0.05	0.81		20.22	0.00
a. Dependent Variable: (Y)						

(Source: SPSS Output)

From the table of co-efficient, the significant p value for the constant used in the regression procedure does not matter. The p-value for each of the independent variable was important. This p-value was only applied to a single independent variable, and not to the entire group. The general form of the hypothesis test is as follows:

H_{04} : The opening price (X- independent variable) is not a significant predictor of (Y- dependent variable).

H_{14} : The opening price (X- independent variable) is a significant predictor of (Y- dependent variable).

From *table 13* it may be inferred that the significant p-value of X i.e. Opening price was $0.00 < 0.05$. Therefore, the null hypothesis H_0 was rejected and H_1

was accepted i.e. opening price is a significant predictor of the closing price. Therefore, from the overall interpretation it may be inferred that the investor’s sentiment generated on the day of listing was carried throughout the day till the close of the market.

Thus, the regression equation $Y = a + bx$. From co-efficient table, $Y = 6.52 + 1.09X$, where $a = 6.52$ and $b = 1.09$. From the co-efficient table it may be interpreted that the returns based on opening price had 5% significance for changes in the returns based on the closing price. Therefore, it may be inferred that closing returns depend on opening returns.

CROSS SECTIONAL REGRESSION ANALYSIS

In order to know whether the average initial IPO returns based on the opening price are dependent on before market condition, size of the IPO, offer price quotient or not, a cross sectional regression analysis was run.

H_{05} : Opening (Initial) returns do not depend on before market condition, size of the IPO and offer price Quotient

H_{15} : Opening (Initial) return depends on before market condition, size of the IPO and offer price Quotient

TABLE 14 MODEL SUMMARY

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.21 ^a	0.043	0.03	84.51
a. Predictors: (Constant), Market (Y), Size (Y), Quotient (Y)			

(Source: SPSS Output)

TABLE 15 ANOVA ^b

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	68200.24	3	22733.41	3.18	0.03 ^a
Residual	1507046.99	211	7142.40		
Total	1575247.23	214			
a. Predictors: (Constant), Market (Y), Size (Y), Quotient (Y)					
b. Dependent Variable: (Opening Returns =X)					

(Source: SPSS Output)

TABLE 16 COEFFICIENTS ^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-402.96	162.49		-2.480	0.01
Size (Y)	4.93	3.56	0.09	1.39	0.17
Quotient (Y)	408.03	153.22	0.19	2.67	0.01
Market (Y)	-14.79	11.55	-0.09	-1.28	0.20

a. Dependent Variable: (Opening Returns =X)

(Source: SPSS Output)

➤ SIZE

The size of one IPO varies from the size of other IPO. Therefore, natural log of size was taken. If the absolute value of the size was taken for running regression analysis then it may not give correct result, due to normality issue of the data (Kumar, 2007). To avoid this problem (Ln) Natural Log function was used.

➤ BEFORE MARKET CONDITION

In the run up to the opening of the issue if the general market conditions are buoyant the issue may draw more investors and this may lead to a higher demand. Since the number of shares was limited and the demand was not fully met, upon listing there may be lot of buying interest that may lead to the issue listing at a premium to the offer price. A dummy variable was introduced that assumed a value of zero if market has declined in at least half of the trading days in the month prior to the IPO opening and it will assume a value of 1 if the market had moved up (Kumar, 2007).

➤ OFFER PRICE QUOTIENT

Higher the listing day gains means more was the demand for the stock. If the demand was properly gauged in the market before the issue was opened then the offered price will be close to the upper price limit. Therefore, the quotient of offered price to upper price limit was introduced as another independent variable to explain the under pricing phenomena (Kumar, 2007).

Offer price Quotient was calculated by using the following formula

Offer price Quotient =

Offer price (Issue price)

Upper Price limit

➤ INTERPRETATION

Significant Co-relation with r was equal to 0.21. Approximately 4.3% of variation in return based on opening price was dependent on the before market condition, size of the IPO, offer price quotient. R² was simply the percentage of variance in the dependent variable explained by collection of independent variable. R² provided an indication of explanatory power of regression model. Significant linear regression with p-value was 0.00.

REGRESSION EQUATION

$y = a + bx + cx_1 + dx_2$ where, x = size of the IPO, x_1 = before market condition, x_2 = offer price quotient. From the coefficient table, $y = -402.96 + 4.93x_1 + 408.03x_2 - 14.79x_3$. If value of dummy variable is 0, then $y = -402.96$. If value of dummy variable is 1, then, $y = -402.96 - 14.79x_3$; where, $a = -402.96$, $b = 4.93$, $c = 408.03$, and $d = -14.79$.

Positive coefficient means X and Y change in same direction. If X increases then Y increases and if X decreases then Y decreases. Negative coefficient means X and Y change in opposite direction and if X increases then Y decreases and if X decreases then Y increases. The multiple R is 0.21 which showed that there was no correlation between the dependent and independent variable, further it was also known that the correlation was not significant. From cross sectional regression it may be inferred that opening return depended on quotient because p-value was 0.01 ($p < 0.05$), so it was statistically significant. Remaining variables are not statistically significant. As per the *table 15* of ANOVA the p-value was 0.03 ($0.03 < 0.05$) which meant that null hypothesis was rejected and so opening (initial) return do not depend on before market condition, size of the IPO and offer price quotient was rejected. From the co-efficient table it may be interpreted that opening return was dependent on quotient.

TREND ANALYSIS

Trend analysis was used to forecast the value of average Nifty for the year 2012 and 2013.

TABLE 17 TREND ANALYSIS COMPUTATION

Year	Time (t)	Average Nifty (y)	W= t-t	W _y	W ²
2007	1	4567.285	-2	-9134.57	4
2008	2	4346.214	-1	-4346.21	1
2009	3	4109.5790	0	0	0
2010	4	5461.193	1	5461.193	1
2011	5	5340.394	2	10680.79	4
Total	$\Sigma t=15$	$\Sigma y=23824.666$		$\Sigma wy=2661.197$	$\Sigma w^2= 10$

(Source: Excel Output)

Average Nifty was used to forecast the value of average Nifty in 2012 and 2013. The average Nifty of 2007, 2008, 2009, 2010 and 2011 was coded as 1,2,3,4, and 5 respectively.

$$B = \Sigma wy / \Sigma w^2, B = 266.1197$$

$$A = \Sigma y / n, A = 4764.93$$

Average Nifty for 2012 can be calculated by using following equation,

$y_{t=}$ a + bw [Year 2012 is coded as 6], *Average Nifty for 2012 =5563.2891*. Average Nifty for 2013 can be calculated by using above equation, [Year 2013 is coded as 7], *Average Nifty for 2013 =5829.4088*.

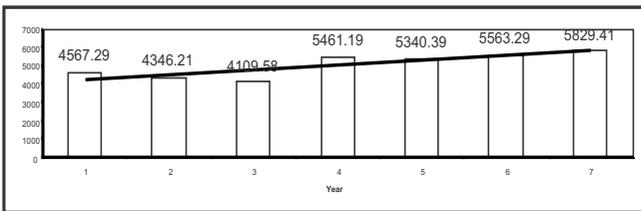


Figure 3 Trend Analysis

From the above graph, it can be inferred that market showed a bullish trend. It moved from 4567.29 in 2007 to 5340.39 in 2011. The trend analysis showed the uptrend of Nifty Index for the year 2012 and 2013 with the anticipated values at 5563.29 and 5829.41 respectively.

FINDINGS AND DISCUSSION ON LONG RUN ANALYSIS

OF IPOs (2007 - 2011)

IPO performance in long run was examined by using two measures buy and hold market adjusted returns (BHAR) and monthly market adjusted returns (MMAR). The formula for the same is given below.

BHAR = $[\{ \Sigma (1+Rit_1)-1 \} - \{ \Sigma (1+Rit_2)-1 \}] * 100$ where, Rit_1 = Return of Script after 3 months. Rit_2 = Return of Script on the day of listing. $MMAR = [\{ \Sigma (1+Rmt_1)-1 \} - \{ \Sigma (1+Rmt_2)-1 \}] * 100$, where, Rmt_1 = Return of Index after 3 months. Rmt_2 = Return of Index on the day of listing.

TABLE 18 CALCULATION OF BHAR & MMAR

Sample Size	Months from Listing	BHAR		MMAR	
		Annualized Returns	Trimmed Mean (5%)	Annualized Returns	Trimmed Mean (5%)
216	3	4.4798	3.8662	-0.0003	0.0023
204	6	4.5881	4.0646	-0.0188	-0.0169
190	12	-0.1269	-0.1494	-0.0954	-0.0926
133	24	8.6664	9.0776	0.0254	0.0299
109	36	6.4062	5.7982	0.1442	0.1471
85	48	1.0670	0.0056	0.1251	0.0015
5	60	-4.5640	-0.9128	1.6225	0.3245

(Source: Excel Output)

Above table 18 shows BHAR and MMAR after 3,6,12,24,36,48 and 60 months. After 3 months of IPO listing if investor had sold the shares allotted in IPO then he would get 4.48% return which was higher than return of Index (Nifty return). Average trimmed mean was calculated to remove the effect of outliers. At the end of 12 months of listing it was observed that the return was negative, this may happen because of stock selling pressure which might have outperformed the buying pressure. It may happen that long term investors (who stayed invested for 12 months) might have achieved their targeted return and so they sell the share. After the period of 12 months, only very long term investors stayed invested in the share, and such very long term investors were rewarded with highest return. The return was highest after 12 months may due to companies hitting their targeted objective of green field or brown field project and were earning good returns, which was reflected in terms of rise in the price of shares. After 24 months the return showed diminishing trend. After 60 months it became negative. When a comparison was made between Nifty return and IPO return, it may be inferred that the IPO had performed well and Nifty showed a bearish trend.

So a trend could be understood that after 12 months the stock faced severe selling pressure and after the lower bottom it performed well. Investors tend to carry forward shares (allotted in IPO) of those companies which had strong fundamentals. Since 60 months was treated as a long period the cycle of stock specific bearish trend repeated after 5 years. Prudent investors would like to exit from their investment after the horizon of five years, anticipating that companies might have moved in the maturity stage and investors considered this an appropriate time to reap wealth and profits.

CONCLUSION

In short run out of 217 IPOs 161 IPOs were under-priced, which enabled the investor to get listing gain. 42 IPOs were overpriced and 14 IPOs were aptly priced. In long run if investor holds script for 24 months the investor got highest average return, after that the average return showed diminishing trend. After 12 months it showed negative return because of selling pressure in stock market. When annualized return of Nifty was compared with annualized return of IPOs then, IPOs had performed well as compared to Nifty return. Based on secondary data it may be concluded that initial return depended only on offer price quotient and closing return depended on opening returns.

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