

“EVALUATING THE CORRELATION AND SENSITIVITY BETWEEN IPOs AND IPO GRADING: USING REGRESSION ANALYSIS ON THE SELECTED SAMPLE”

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OBJECTIVES OF THE RESEARCH

The research will focus on analysing the IPOs which were launched in 2012-13 in the frame work of Indian Financial Markets on various parameters and will combine the below topics -

- **IPO Grading:** Whether higher Grading leads to greater rate of return
- **Statistical Analysis:** Correlation between the grading obtained by a company and retail investors' appetite for that issue
- To statistically analyse returns of all the IPOs launched in 2012-13 (periodically) and finding their average return

DATA MODELS USED IN THE STUDY

- 1) This model is used to test hypothesis-II that higher the grade better are the returns. Only graded IPOs are considered for this hypothesis.

The returns of graded and IPOs are analysed over a period of 3 months. The following model estimates the same

RateOfReturn

$$= \beta_0 + \beta_1 \text{Log}(\text{IssueSize}) + \beta_2 \text{Log}(\text{IssuePrice}) + \beta_3 \text{Age} \\ + \beta_4 \text{Log}(\text{subscrptn}) + \beta_5 \text{Grade_Dum2} + \beta_6 \text{Grade_Dum3} \\ + \beta_7 \text{Grade_Dum4} + \beta_8 \text{Grade_Dum5}$$

Where,

RateOfReturn: Rate of return for a particular IPO after 3 Months.

$$\text{RateOfReturn} = (P_f - P_l) / P_l$$

P_f : Closing Price after 3 months from listing day

P_l : IPO Listing Price

Age: It is the time span between company's inception date and the listing date of its IPO (measured in years)

Subscription: No. of times the issue is subscribed

IssuePrice: Price at which a particular IPO is issued to the investor (In INR per equity share)

IssueSize: Size of the particular IPO issue (In INR Crores)

Grade_Dum2: Take value '1' if IPO is graded 2 else '0'

Grade_Dum3: Take value '1' if IPO is graded 3 else '0'

Grade_Dum4: Take value '1' if IPO is graded 4 else '0'

Grade_Dum5: Take value '1' if IPO is graded 5 else '0'

2) The second model used is a multiple linear regression model where the dependent variable is the level of QIB subscription at the time of book building and the independent variables used in the model are Issue price, Issue size and a dummy variable for grading. The equations given is stated as –

QIB_Sub

$$= \beta_0 + \beta_1 \text{IssuePrice} + \beta_2 \text{IssueSize} + \beta_3 \text{Grade_Dum2} \\ + \beta_4 \text{Grade_Dum3} + \beta_5 \text{Grade_Dum4} + \beta_6 \text{Grade_Dum5}$$

Where,

QIB_Sub : Subscription levels of Qualified Institutional bidders for a particular IPO

$Grade_Dum2$: Take value '1' if IPO is graded 2 else '0'

$Grade_Dum3$: Take value '1' if IPO is graded 3 else '0'

$Grade_Dum4$: Take value '1' if IPO is graded 4 else '0'

$Grade_Dum5$: Take value '1' if IPO is graded 5 else '0'

IssuePrice: Price at which a particular IPO is issued to the investor (In INR per equity share)

IssueSize: Size of the particular IPO issue (In INR Crores)

ASSUMPTIONS

- Perfect Market conditions are assumed and hence there is no insider trading and no information Asymmetry
- All the tests are carried at 5% significance level unless otherwise stated

RESEARCH METHODOLOGY AND HYPOTHESIS

It will be Quantitative as well as Qualitative study. The data will be collected from secondary sources. Following are the methodologies and hypothesis to achieve our objectives-

- IPO Grading: Whether higher Grading leads to greater rate of return.

Since grade is the reflection of company fundamentals, an IPO with higher grading is better prospect of investment than another company with lower grade. Thus, post IPO grading, we set to test whether IPOs with higher grades earn better returns in compared to IPOs with lower returns

Hypothesis I: Higher is the IPO grade, higher return on Investments

- With the help of statistical analysis, we will try to see whether there is a differential impact on the subscription level of QIB investors with higher grading. The data of 106 Book Building IPOs have been taken and analysed. The sample is collected over a time span starting from 1st January 2011 to 31st March 2014.

After grading of an IPO, subscribing to IPOs is done and hence an after activity in which grading might play a vital role. We will also look at the correlation between grading and subscription level of retail investors.

Hypothesis II: Higher is the IPO grade, more the appetite of QIB Investors' subscription levels

- To statistically analyse returns of all the IPOs launched in 2012-13 (periodically) and finding their average return.

For the purpose of analysis IPO's issued during the period 1st January 2012 to 31st March 2013 is considered. Since the focus is to find out returns on IPO's from the point of listing day, subsequent day, one week, one month, three months and six months data were collected up to 30th December 2013 so as to calculate returns for the IPO's made in the tail end of the period.

Hypothesis III: Listing day and next day returns are far higher compared to return on other days.

RESULTS AND ANALYSIS

1) Hypothesis I: Higher is the IPO grade, higher return on Investments

The returns of graded and IPOs are analysed over a period of 3 months. Sample of 180 IPOs are taken from April 2008 to June 2013. The following model estimates the same

RateOfReturn

$$= \beta_0 + \beta_1 \text{Log}(\text{IssueSize}) + \beta_2 \text{Log}(\text{IssuePrice}) + \beta_3 \text{Age} \\ + \beta_4 \text{Log}(\text{subscrptn}) + \beta_5 \text{Grade_Dum2} + \beta_6 \text{Grade_Dum3} \\ + \beta_7 \text{Grade_Dum4} + \beta_8 \text{Grade_Dum5}$$

| Dependent Variable: QIB_Sub | | | |
|-----------------------------|-------------------------------|-----------------------------|-------------------|
| Independent Variables | Expected Sign of Coefficients | Actual Sign of Coefficients | Coefficient Value |
| MarketReturn | ‘+’ | ‘+’ | 0.7502(2.52) |
| IssuePrice | ‘+’ | ‘+’ | 5.8631(0.53) |
| IssueSize | ‘+’ | ‘+’ | 1.0691(0.12) |
| Age | ‘+’ | ‘+’ | 0.3328(1.11) |
| Sub_Rate | ‘+’ | ‘+’ | 5.0166(0.62) |
| GradDum2 | NA | ‘+’ | 7.7526(2.49) |
| GradDum3 | NA | ‘+’ | 6.4203(0.39) |
| GradDum4 | NA | ‘+’ | 3.8283(0.20) |
| GradDum5 | NA | ‘+’ | 1.3340(0.04) |
| Constant | NA | ‘-’ | 35.4663(-1.31) |

Sample of 180 IPOs have been taken since 2008

- As clearly shown in table, higher grade does not ensure higher returns which is not in accordance with the popular belief. It can be clearly observed the Grade 2 IPOs have generated higher returns as compared to IPOs that are graded 3,4 and 5.
- Similarly, we can see that returns generated by Grade 2 and Grade 3 IPOs do not differ by a significant amount.

The above results clearly show that higher grade IPOs not necessarily generated higher returns in the short run. And Grading do not impact the performance of IPOs.

2) To study the relationship between IPO grade and QIB investors' subscription level- Higher is the IPO grade, more the appetite of QIBInvestors' subscription levels

QIB_Sub

$$= \beta_0 + \beta_1 \text{IssuePrice} + \beta_2 \text{IssuSize} + \beta_3 \text{Grade_Dum2} \\ + \beta_4 \text{Grade_Dum3} + \beta_5 \text{Grade_Dum4} + \beta_6 \text{Grade_Dum5}$$

| Dependent Variable: QIB_Sub | | | |
|-----------------------------|-------------------------------|-----------------------------|-------------------|
| Independent Variable | Expected Sign of Coefficients | Actual Sign of Coefficients | Coefficient Value |
| IssuePrice | '-' | '+' | 0.0178341(1.29) |
| IssueSize | '+' | '+' | 0.0001947(0.10) |
| GradDum2 | NA | '+' | 9.406079(1.06) |
| GradDum3 | NA | '+' | 30.04338(3.33) |
| GradDum4 | NA | '+' | 41.12755(4.08) |
| GradDum5 | NA | '+' | 40.12755(2.23) |
| Constant | NA | '+' | 18.56216(0.021) |

Time Span – January 2011 to July 2013

Sample – 108 IPOs launched within the time span.

- After looking at the results above, it can be clearly seen there is always an increase in the subscription levels of QIB investors as the grading increases. The differential coefficients clearly help us to achieve our objective of finding the relationship between QIB investors and grading of IPOs.
- As per normal belief, higher price leads should lead to lower subscription level of QIB investors. But, our empirical results show that IssuePrice is positively related to QIB subscription levels.
- The subscription levels of grade 2 are higher than grade 1 by a factor of 9.40. Similarly, the subscription levels of grade 3 are higher than grade 2 by a factor of 20.64 units which is quite significant.
- But there is not much significant difference between Grade 4 and Grade 5 IPOs.

Now, after testing the above hypothesis the correlation between the subscription levels of QIB and Retail Investors with Grading is obtained.

| | |
|--|---------|
| Correlation between QIB and Grading | 0.5144 |
| Correlation between Retail Investors and Grading | -0.0674 |

There is a slight positive correlation between QIB investors' subscription levels and Grading. It clearly shows that if grading increases, the subscription level increases. Although as far as retail investors are considered, they do not pay much attention to grading given by rating agencies. It is clear from the correlation coefficient obtained.

3) Hypothesis III: Listing day and next day returns are far higher compared to return on other days.

To test whether stock has generated positive return or not on the listing day, next day, one week and three-month prices quoted in the stock market on the relevant day is considered. For the

purpose of analysis, day's closing price is considered. The return on IPOs has been computed as the difference between the offer price and price prevailed on the selected day.

Return is calculated as follows

$$\text{Return} = (P1 - P0) * P0 / 100$$

P1= Price prevailing on the selected day

P0=issue price

Data is also analysed with the help of standard deviation and correlation with IPO Index.

| | Average Return | Std. Deviation |
|-----------------|----------------|----------------|
| Listing | 7.05 | 3.65 |
| Next | 5.66 | 7.87 |
| One week | -6.273394 | 8.5171 |
| 3months | -2.024 | 12.31016 |

Time Span – January 2012 to July 2013

Sample – 55 IPOs launched within the stipulated time frame.

Considering all the IPOs that were launched in the year 2012-13, we can clearly see that IPOs give better returns on the listing day and the subsequent day as compared to one week and three months. Standard deviation of 12.31016 shows large variations in the average returns generated from IPOs over a period of 3 months.

Note – **Mispricing of IPOs** is the major challenge in Indian IPO market. It clearly indicates the phenomenon of overpricing i.e. the IPOs are issued at a higher price than at what it should have been issued at.

4) For statistical analysis sector wise performance of IPOs during the year 2011-2012, industries are broadly classified into steel, engineering, finance, precious metals, services, infrastructure and miscellaneous. Analysis is made by comparing days' closing price on the listing day, next day, one week and three month.

As it can be clearly inferred from the table, engineering sector has generated the least returns

| | No of Companies | Listing Day | Next Day | One week | Three months | Six months |
|-----------------|-----------------|-------------|----------|----------|--------------|------------|
| Steel | 2 | 8.999402 | -0.46308 | -3.57633 | 16.93134 | 17.39765 |
| Engineering | 2 | -10.412 | -40.7492 | -49.3101 | -49.3393 | -48.3621 |
| Services | 4 | 3.513889 | 36.74071 | 12.35769 | 18.75331 | 20.42628 |
| Precious Metals | 3 | 1.442534 | 1.61913 | -12.877 | -7.04174 | -3.22037 |
| Finance | 4 | 5.612245 | 20.13265 | 35.67347 | 145.0969 | 131.1173 |
| Infra | 3 | -0.29396 | 28.93048 | -46.2648 | -43.6572 | -30.9608 |
| Others | 8 | 12.54679 | -32.3251 | -32.3029 | -56.001 | -53.159 |
| | | | | | | |

according to the comparative analysis from other sectors. The sectors which have given positive returns are Finance and Services; though Finance being on the higher side. The miscellaneous sector comprising of mid-size firms of various domains have given a positive return only on the listing day as it can be attributed to the fact that companies had either poor fundamentals or mispriced their IPOs.

CONCLUSION

After the comprehensive study of Indian IPO industry during the year 2012, we can certainly say that mispricing of the stock i.e. overpricing of IPOs is a very common practice that is done by almost 80% of the companies when they decide to go public. As an investor, one should not go only by grading and market sentiments to invest in an IPO; one should look into the company's fundamentals and can be advised to wait for sometime before investing in an IPO.

Considering all the IPOs that were launched in the year 2012-13, we can see that IPOs give better returns on the listing day and the subsequent day as compared to one week and three months. So, it can be concluded that the listing day and subsequent day return for IPOs are better as compared to the 1 week or more. This reason is also attributed to the overpricing of the IPOs. Standard deviation of 12.31016 clearly shows the wide fluctuations in the profits generated. Even the variation in average returns earned on the listing day and the subsequent day is comparatively less. Thus, we can say that Listing day and next day returns are far higher compared to returns on other days.

Our analysis of grading and its impact on subscription level for Retail and QIB investors clearly indicate that Retail investors do not give much value to the grading given by credit rating agencies while bidding for IPO issues. Although SEBI made IPO grading mandatory, primarily to facilitate quality information dissemination to these class of investors. On the other hand, Qualified Institutional Bidders seems to be more aligned to IPO grading, while making investment decisions, thus information rich investors, seems to be using additional available information more wisely.