



## An Analysis of Grading Certification with Underpricing in Indian Book Built IPOs

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### Abstract

This paper analyzed the impact of grading certification on underpricing. For this purpose, a sample of 335 Book built IPOs (for the period January 2006 – December 2015) is taken, out of which 203 were graded and 132 non graded. The study is aimed to test the efficacy of grading on the listing the day's return. The analysis is done with the help of descriptive statistics, Regression analysis, Independent Sample T test and Anova test. Regression result indicates grading has negative relation with market adjusted underpricing. Hence, null hypothesis is rejected and expected hypothesis is accepted. This ensures that higher the IPO grades, lower the Underpricing. Hence coefficient value (-.062) is significant at 10% confidence level. Moreover, Independent sample T test and one-way Anova do not produce significant result. Hence null hypothesis cannot be rejected which signifies that there is no significant difference and variance in mean return of the graded and the Non graded IPOs. The findings of the study are useful for the investors and companies so as to avoid the risk of speculation and money left on table respectively.

**Key words:** Initial Public Offerings (IPO); IPO-Grades; Underpricing; Capital Market Efficiency

**JEL Classification:** G29

**Paper Classification:** Research Paper

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### Introduction

The paper aims to analyze the impact of grading certification on the listing day's performance of Book built IPOs with the help of different statistical techniques as Linear regression model, Independent sample T – Test and one-way Anova analysis.

Grading of IPOs in India is a unique feature than worldwide. As a part of a series of reform initiatives to protect investors' interest, the market regulator, Securities and Exchange Board of India (SEBI hereinafter) introduced the concept of grading of public issues on an optional basis but later on the optional grading provision has become 'mandatory grading' of public issues in May, 2007, which came in form of assisting the fundamental position of those companies which are not listed with the stock exchanges [viz. Initial Public Offerings (IPOs)]. IPO grading service is provided by some credit rating agencies (CRAs), including ICRA, CRISIL, Fitch Ratings India

and CARE, registered with SEBI. According to SEBI, SEBI will not certify the assessment made by the grading agency. The main objective of such IPO grading is to enable investors to have an independent opinion about making an investment in an unlisted company. Though grading has been de - optional for companies from 4th February 2014. Generally grading is assigned on a five-point point scale with a higher score to lower score which indicates stronger fundamentals and vice versa as below.

IPO grade 1: Poor fundamentals; IPO grade 2: Below-average fundamentals; IPO grade 3: Average fundamentals; IPO grade 4: Above-average fundamentals; IPO grade 5: Strong fundamentals.

The objective of this practice aimed to reduce the information asymmetry amongst the retail investors (less informed investors) and QIBs and Institutions (more informed investors). Hence, this step of SEBI is in pursuit to safeguard the interests of retail investors.

### Review of Literature

IPO Grading has limited empirical references. A conceptual framework on grading has been produced by Saha (2006). Apart from this, Jain and Sharma (2008) also produced importance of grading to investors in his conceptual paper. Deb and Marisetty (2008); Poudyal (2008) found negative relation of grading with underpricing. While Khurshed et al (2008) documented that there is no impact of grading on underpricing of Book built IPOs. Sharma et (2012) documented a weak negative correlation (-0.37) between underpricing and grades. Grading has shown negative relationship with underpricing (Bansal & Khanna, 2012). Underpricing has declined over a sample of 2005 to 2011 (Jacob and Agarwalla, 2012). The results of these studies are summarized in Table 1.

The Table No.1 produces past evidence related to grading certification and Underpricing.

**Table 1: Relationship of various variables with grading**

S. N.	Variable/s	Relationship / Impact	Studies
1	Overall subscription rate	Positive (higher)	Deb and Marisetty (2008); Poudyal (2008); Sharma; Mittal and Gupta (2012); Mittal, Gupta, Sharma (2013)
		No	Bansal and Khanna (2012)
3	Liquidity / Turnover Ratio	Positive (higher)	Khurshed; Paleari; Pande and Vismara (2008)
		Inverse	Poudyal (2008)
4	Long term performance	No	Poudyal (2008)
	Post issue promoter holding	Negative	Sharma; Mittal and Gupta (2012)
5	Listing day's return / Underpricing	Negative	Deb and Marisetty (2008); Poudyal (2008); Sharma; Mittal and Gupta (2012); Bansal and Khanna (2012); Jacob and Agarwalla (2012)
		Weak impact	Mittal, Gupta, Sharma (2013)
6	Demand (investors' subscription)	Limited influence	Jacob and Agarwalla (2012)
7	Demand of retail investors, Issue size, Earnings Before Interest and Dividend, long-term debt-equity, Equity ratio and profit to the book value ratio.	Positive	Bansal and Khanna (2012)

## Research Methodology

Sample size of the study: 335 Book built IPOs, listed at NSE for the period January 2006 to December 2015.

### Variables description

**Dependent variable:** Underpricing (listing day’s return)

**Underpricing\*:** Underpricing is also called as an initial return which refers to the listing day’s return. Initial return is defined as  $(u, - OP)/OP$ , where OP is the offering price and U, is the closing bid price on the first day of public trading (Beatty and Ritter, 1986).

The underpricing for each IPO and for groups of IPOs is calculated using the methodology used by Aggarwal, Leal & Hernandez (2007) reused by Chi & Padgett (2002).

\*Here underpricing means MAAR (Market Adjusted Abnormal Returns or Listing day’s return)

The total return for stock ‘i’ at the end of the first trading day is calculated as:

$$R_{i1} = (P_{i1} / P_{i0}) - 1 \dots\dots\dots 1$$

Where  $P_{i1}$  is the price of the stock ‘i’ at the close of the first trading day, and  $P_{i0}$  is the offer price and  $R_{i1}$  is the total first-day return on the stock and so on.

The return on the market index during the same time period is:

$$R_{m1} = (R_{m1} / R_{m0}) - 1 \dots\dots\dots 2$$

Where  $P_{m1}$  is the market index value at the close of first trading day and  $P_{m0}$  is the market index value on the offer day of the appropriate stock, while  $R_{m1}$  is the first day’s comparable market return and so on.

Once raw return (called raw underpricing) and abnormal return (market adjusted underpricing) is calculated. Using these two returns, the market-adjusted abnormal return for each IPO and groups of IPO is calculated as  $\{(equation 1) - (equation 2)\}$  which is called as adjusted Underpricing.

$$MAAR = (R_{i1} - R_{m1}) / 1 + R_{m1} \dots\dots\dots 3$$

**Independent variable:** Grading certification - Actual IPO Grades (1, 2, 3,4 and 5)

### Objectives of the study

1. To analyze the degree of underpricing in pre grading regime of IPOs and post grading regime of IPOs and
2. To analyze the impact of IPO grades on underpricing

## Data Analysis and Result Discussion

Analysis of IPO Grading with respect to Underpricing (Listing day’s return)

**Null hypothesis:** There is no impact of Grading on listing day’s return (MAAR).

**Alternative hypothesis:** Grading is inversely related to listing day’s return.

**Assumptions:** An IPO with highest grade (for example, 5) signals strong fundamentals of an Issuer company. Therefore, the demand for shares of such IPO will also be high. This results in an opportunity to an issuer to price the issue aggressively and set maximum realization. Hence, this will minimize the underpricing. Thus, the percentage of underpricing must reduce with increase in the IPO Grades. (Refer: Sharma et al, 2012)

## Testing of the hypothesis

To see the impact of grading on a sample of study (335 IPOs), a linear regression analysis is applied. The MAARLD is transformed in natural logarithm to avoid heteroscedasticity (Pandey, 2007). The model assumed negative coefficient value. Hence, usefulness of IPO grading is analyzed using following linear regression model:

$$\text{LnMAARLD} = \alpha + \beta \text{ Grade dummy} + \text{error}$$

(Where: LnMAARLD – Market Adjusted Abnormal Return on Listing Day; Grade\_dummy refers: – value 1 for Graded IPOs and Value 0 for Non- Graded IPOs)

Table 2 represents Results of regression model with Adjusted market return on listing day (adjusted underpricing) as a dependent variable and IPO Grade.

**Table 2: Model Summary and Coefficient**

Predictor	Estimates of Std. coefficients ( $\beta$ )	Standard error	t- statistics	Significance level	R square	Adjusted R square	Significance level
Intercept	.141	.028	4.96	.000	-	-	-
Grade_dummy	-.093	.036	-1.70	.089*	.009	.006	.045**

\* $\beta$  coefficient is significant at 10% confidence level; while correlation is significant at 5% level

As expected, regression result (Table 2) indicates that the coefficient ( $\beta$ ) associated with IPO grade has a negative sign (-.093) with Underpricing. This indicates that the extent of underpricing is negatively correlated to the IPO Grade, i.e. Higher the IPO Grade, Lesser the underpricing. The IPO grade shows significance at 10% confidence level, indicating a low explanatory power. Although, an expected correlation (-.093) is significant at 5% level, indicating, negative association of IPO Grades with Underpricing (refer annexure - 1). Regression does a good job as ( $\beta$ ) coefficient is found negative as shown in Table 2. The standardized coefficient determines the relative importance of the significant predictor (Actual IPO Grade). Hence the impact of grading is explained by the model as per expected result. Therefore, the Null hypothesis is rejected, and the alternative hypothesis is accepted at 10% confidence level. However, model is not powerful enough to explain variation in Underpricing as  $R^2$  and the adjusted  $R^2$  values are 0.009 and 0.006 respectively.

Further, this analysis is extended by dividing the study sample into two categories: namely 1) Graded IPOs; and 2) Non Graded IPOs. Following Table number 3 and 4 are representing the distribution of mean underpricing in Graded and Non Graded IPOs.

**Table 3: Distribution of Graded IPOs: Listing day's returns**

Year	No. of IPOs	Listing Day's Average Raw Return (%)	Market Adjusted Underpricing (%)	Market Return (%)
2006	02	49.29	46.50	1.83
2007	13	44.83	40.11	3.30
2008	32	10.65	16.41	-5.00
2009	21	9.79	7.65	2.39
2010	61	13.49	12.96	0.44
2011	35	5.37	6.02	-1.03
2012	10	4.96	5.12	-0.04
2013	03	1.96	4.58	-2.41
2014	05	28.76	28.65	-0.24
2015	21	10.38	12.05	-1.51
2006-2015	203	13.97	14.34	-0.39

**Table 4: Distribution of Non - Graded IPOs: Year Wise Listing day's return**

Year	No. of IPOs	Listing Day's Average Raw Return (%)	Market Adjusted Underpricing (%)	Market Return (%)
2006	56	22.06	18.14	3.08
2007	75	23.47	23.56	-0.61
2008	1	25.2	27.44	-1.76
2006-2008	132	22.88	21.29	0.94

Further, the following null hypothesis is developed which is when an equal mean is assumed between two samples.

### Null hypothesis

There is no significant difference between mean underpricing of Graded IPOs and Non Graded IPOs.

To test this hypothesis, an Independent Sample T- test is applied. The results of Independent Sample T- test are given in Table 6.

**Table 5 : Descriptive Statistics of Graded and Non Graded IPOs**

	Parameters	N	Mean	Std. Deviation	Std. Error Mean
Underpricing	Non graded	132	21.29	44.602	3.882
	Graded	203	14.34	39.317	2.759

Table 5 shows that the average underpricing in Graded IPOs is higher than the average underpricing in Non-Graded IPOs. The Table 6 indicates the value of T statistics (1.498) which is less than 2 and not significant as p value (0.135) is higher than 0.05. Hence the null hypothesis cannot be rejected which means there is no significant difference between underpricing of Graded IPOs and Non graded IPOs.

**Table 6: Summary of Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
MAARLD	Equal variances assumed	1.918	.167	1.498	333	.135	6.948	4.638	-2.174	16.071
	Equal variances not assumed			1.459	254.660	.146	6.948	4.763	-2.432	16.328

The first section of Table 6 indicates that there is no variance in mean underpricing of Graded and Non-Graded IPOs samples as the significant value of Levene's Test for Equality of Variances is (0.167) which is greater than 0.05 means no significant value.

The second section of Table 6 indicates result of T – test which documents that the p values 0.135 and 0.146 are not significant at 5% confidence level in both cases when equal variances is assumed and equal variances is not assumed. Therefore, the null hypothesis is accepted, and it is documented that there is no significant difference between mean underpricing of Graded and Non-Graded IPOs.

### One way Anova Analysis

Further One way Anova is applied to ensure that there is no difference in underpricing across the IPO grades (1, 2, 3, 4 and 5). This test is applied to strengthen the results of Regression model as per expected hypothesis.

As per this view, effect of IPO grades on underpricing is evaluated. Accordingly following hypothesis is developed:

**Null hypothesis (Ho):** Grades of an IPO has no effect on Underpricing

**Alternate hypothesis (Ha):** IPO Grades has inverse relationship with Underpricing.

**Table 7: Descriptive Statistics of Raw Underpricing and Adjusted Underpricing Across The IPO Grades**

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
MAARLD	1	12	-9.1482	13.73269	3.96429	-17.8736	-.4229	-30.15	16.58
	2	60	13.6664	36.18230	4.67112	4.3195	23.0133	-57.65	146.64
	3	80	18.5282	44.93892	5.02432	8.5276	28.5289	-70.59	201.55
	4	46	15.1904	35.86378	5.28783	4.5402	25.8407	-62.68	109.90
	5	5	4.1153	41.56019	18.58628	-47.4884	55.7191	-62.17	50.68
	Total	203	14.3438	39.31664	2.75949	8.9028	19.7849	-70.59	201.55
RAWRETLTD	1	12	-11.9767	17.55049	5.06639	-23.1277	-.8256	-34.31	22.63
	2	60	13.8783	38.60650	4.98408	3.9052	23.8515	-62.45	159.57
	3	80	18.5504	44.62287	4.98899	8.6200	28.4807	-68.72	183.95
	4	46	14.1804	35.24988	5.19731	3.7125	24.6484	-63.54	102.63
	5	5	2.1040	39.06506	17.47043	-46.4017	50.6097	-61.23	45.32
	Total	203	13.9696	39.87066	2.79837	8.4518	19.4874	-68.72	183.95

\*MAARLD: Market adjusted abnormal return on listing day (Adjusted Underpricing) and \*\*RAWRETLTD: Raw return on listing day

Table 7 shows average raw underpricing and adjusted underpricing as 13.97% and 14.34% respectively for the sample of 203 graded IPOs. Raw underpricing and adjusted underpricing seems to increase as IPO Grades increase from 1 to 3, and after that from grade 4 to 5 they (both) seem to decrease.

**Table 8 : Test of Homogeneity of Variances**

	Levene Statistic	df1	df2	Sig.
MAARLD	1.470	4	198	.213
RAWRETLTD	1.143	4	198	.337

Table 8 depicts the result of homogeneity of variances. Here Levene statistics is not significant.

**Table 9: Results of ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
MAARLD**	Between Groups	8606.878	4	2151.720	1.403	.234
	Within Groups	303644.314	198	1533.557		
	Total	312251.192	202			
RAWRETLTD*	Between Groups	10463.692	4	2615.923	1.667	.159
	Within Groups	310649.550	198	1568.937		
	Total	321113.242	202			

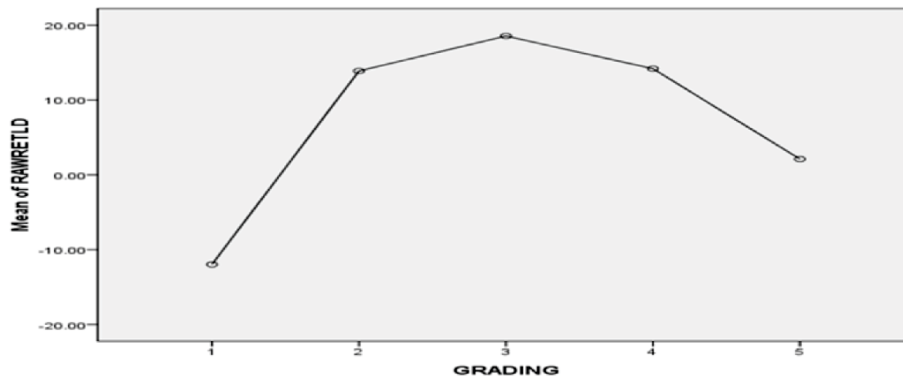
\*\* market adjusted underpricing; \* raw underpricing (raw IPO return on listing day)

Table 9 states that the Anova p value (0.234) is not significant at 5% confidence. Infact it is quite greater than 0.05. Hence the null Hypothesis cannot be rejected. This ensures that the Underpricing does not have any relation with IPO grades. Statistically speaking, they are independent of each other. The results are in sync with Sharma; Mittal and Gupta, (2012). However, the negative coefficient and correlation signify that there is inverse relationship between IPO Grades and underpricing, that is higher end grades show lower Underpricing (refer Table No. 7). However, regression analysis only supports alternate (expected hypothesis). Results are in sync of Deb and Mariesttey, (2008); Poudyal, (2008).

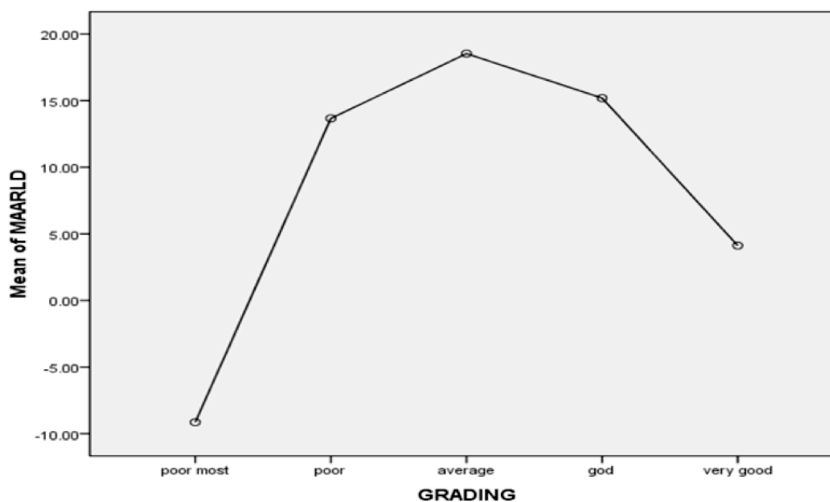
**Description of chart 1 and chart 2**

The chart 1 and chart 2 shows declining trend of raw underpricing and adjusted underpricing with respect to increasing order of IPO grades. Hence as value of grades increases the percentage underpricing decreases. The chart trends support the assumptions which imply that higher the grade lower the underpricing. But as per the statistical results this study, does not support such assumptions.

**Chart 1: Mean raw return and IPO grades**



**Chart 2: Mean adjusted return and IPO grades.**



## Conclusion

The study does not find a significant difference between performance of graded and non-graded IPOs; and, also does not signify the difference in performance of lower graded and higher graded IPOs. This study only ensures that underpricing has been reduced in post grading regime of IPOs as a negative coefficient of correlation is found. Moreover, study does not document the impact of grading on listing day's return in all graded IPOs, as a result, one-way Anova is not significant. The results are in sync of Sharma; Mittal and Gupta, (2012, 2014); Khurshed et al, (2008); Jacob and Agarwalla, (2012); Bansal and Khanna, (2012). Eventually it is to be concluded that there is no significant influence of grading certification on listing day's performance. Hence this study is not able to establish very strong relationship between IPO grades and Underpricing. However, a weak (negative) correlation and coefficient between grades and underpricing do support the results of few earlier studies of Deb and Marisetty (2008), Poudyal (2008) and Khurshed, et al (2008). Results also suggest that grading has reduced the levels of underpricing in post grading regime.

## Significance of the Study

Although this study has failed to support the conceptual framework provided by Saha (2006); Jain and Sharma (2008) that higher grading must lead to lower underpricing. Infact it is recommended to investors to reconsider the grading at the time of investment as mean adjusted underpricing of IPO Grade 5 is 4.11% in comparison to mean adjusted underpricing of IPO Grade 4 being 15.19% (refer Table no. 6). Hence, this study contributes to the decision making of both investors and companies. Apart from this, a regulatory body may also take into consideration further reforms on certification mechanisms.

## Annexure 1 Correlation Matrix Correlations

		LOGUP	GRADINGDUMMY
Pearson Correlation	LOGUP	1.000	-.093
	GRADINGDUMMY	-.093	1.000
Sig. (1-tailed)	LOGUP	.	.045
	GRADINGDUMMY	.045	.
N	LOGUP	335	335
	GRADINGDUMMY	335	335

## Annexure 2 Residuals Statistics Residuals Statisticsa

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.0787	.1408	.1031	.03038	335
Residual	-1.30257	1.08771	.00000	.32531	335
Std. Predicted Value	-.805	1.238	.000	This 1.000	335
Std. Residual	-3.998	3.339	.000	.999	335

a. Dependent Variable: LOGUP

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