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Underpricing of Select NSE-listed IPOs in India with Respect to Differences in Issue Size: An Empirical Analysis

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Abstract
Initial Public Offerings (IPOs) play an essential role of capital formation in the primary capital market. The interested investors subscribe to the IPOs at their issue price. There are many factors influencing the price performance of IPOs. Considering this, the current study analyses the first day price performance of IPOs on the basis of the issue size of the IPOs. The study examines the various measures of first day returns on the basis of the different groups formed considering differences in issue size for the sample IPOs companies. Such measures of average returns are tested for statistical significance with the help of one-sample t-test.
Keywords: Capital formation, Initial Public Offerings (IPOs), Initial Returns, MAAR, Underpricing, Issue size
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1. Introduction

The primary capital market helps to give shape to the economic growth of a nation. Money mobilisation in the economy causes capital formation, which leads to economic development (Tadesse, 2004). Initial Public Offerings or IPOs is one such way of capital formation. For the first time, companies get the opportunity to become listed in a recognised stock exchange, through the IPO process (Ritter, 1998). After the IPOs get listed, trading begins in the secondary market (Mayur, 2018). The pricing of the IPOs is probably the most important segment of this entire issue process. The price of the IPOs is decided on the basis of public demand in case of book-building method. However, decision regarding the price-band or the cut-off price of the issue is determined by the merchant bankers.

Once the IPOs are listed with the stock exchanges, they start generating positive or negative returns. Positive returns generated by IPOs are called underpricing, whereas, negative returns are called overpricing (Madhusoodanan and Thiripalraju, 1997). A significant amount of listing day returns is earned by investors from underpriced IPOs. It is difficult to tell how the IPOs will perform before they are listed and trading begins. However, the IPOs pricing is based on many factors. Some factors are qualitative and some are quantitative (Hedau, 2016). Such factor may be the issue size of the IPOs. In this backdrop, the different measurements of the first day returns of the sample IPOs are considered for the study and they are studied on the basis of the issue size of the IPOs.

2. Past studies

An in-depth study of past literature on the price performance of IPOs revealed some interesting information. Lang-Seng et. al.(2017) found in their study that initial returns have shown high associations with market returns in the non-electronic industry. Torbira and Oki (2017) studied IPO underpricing in the before and after financial crisis and found that the major determinants of underpricing was number of issue units represented by the offer size, market capitalisation of a firm before issue and the GDP. Middi (2018) opined that, factors such as beta, firm's age, firm's size, IPO process, etc. have proved to be insignificant in affecting under-pricing. Samarakoon & Perera (2018) showed that CEO duality, admission of a family member as a CEO of the company and existence of non-executive directors on the board are all related positively with under-pricing. Study by the same researchers show that board size and board committees have a negative impact on underpricing. Anand & Singh (2019) in their study provided evidence that a larger board size or board committee would lead to lesser under-pricing. It should be noted that, the study further showed independent board members whose role is vital with respect to protect the interest of minority shareholders, did not have any bearing on under-pricing. Shenoy et. Al. (2019) found the mean age of firms having underpriced IPOs to be more than the mean of firms having overpriced IPOs. Gao & Hou (2019) conducted a study at Taiwan, concluded that investor sentiments,

information asymmetry and corporate governance were the reasons behind IPOs under-pricing. Matharu (2021) found that age of the firm, industry type for non-finance companies and for banking companies are not statistically significant. Additionally, he found that issue proceeds, delay in listing, issue price are related to underpricing.

2.1 Research gap

(i) No study so far has considered issue size of IPOs to see the different measures of initial returns.
(ii) Very few studies have shown the analysis of various measures of the first day returns taken together, on the basis of listing delay for getting the IPOs listed.

3. Objectives of the Study

The objectives of this study are as follows:

(i) To analyse the distribution of the sample IPOs into the various categories of issue size of IPOs *(Refer to section 5.1);*
(ii) To explore the average initial returns of the sample IPOs from each of the categories on the basis of issue size of IPOs *(Refer to section 5.2);*
(iii) To examine the average MAARs of the sample IPOs from each of the categories on the basis of issue size of IPOs *(Refer to section 5.3);*
(iv) To investigate the average annualised initial returns of the sample IPOs from each of the categories on the basis of issue size of IPOs *(Refer to section 5.4);*
(v) To study the average annualised MAARs of the sample IPOs from each of the categories on the basis of issue size of IPOs *(Refer to section 5.5);*
(vi) To test the statistical significance of the average initial returns, average MAARs, average annualised initial returns, average annualised MAARs of each category of issue size of IPOs *(Refer to section 5.6).*

4. Research Methodology

Data

The data is exploratory in nature and is based on secondary data. The necessary data is collected from the respective websites of National Stock Exchange (NSE), SEBI and the websites of the respective companies. The data related to the issue size of the IPOs is collected from the NSE Website.

Sample Design

The study period for each IPO is basically the first day after getting listed. The study is based on the initial returns or the listing day returns of the sample IPOs. A total of 224 IPOs are selected for the purpose of the study. The IPOs considered for the dataset got listed on the National Stock Exchange (NSE) in India, during 1st April 2000 to 31st March 2017. The sample of 224 IPOs is selected through a non-probabilistic sampling technique called judgement sampling.

Statistical Measures, Tools and Package Used

- Initial return is computed as $(P_1 – P_0)/ P_0 \times 100$; where P_1 is the closing price of the IPO as on listing day and P_0 is the offer price.
- MAAR is computed as $[(P_1 – P_0)/ P_0 –(M_1 – M_0)/M_0] \times 100$; where M_1 is the closing NIFTY 50 as on listing day and M_0 is the closing NIFTY 50 on the last day of the offer period.
- Annualised return is computed as Initial Return × 365/ No. of days taken for listing.
- Annualised MAAR is computed as MAAR × 365/ No. of days taken for listing.
- One-sample t-test is used to test the statistical significance of the average returns under every category under each parameter at 5% level of significance.
- Package used for the analysis of the data are MS Excel 2016 and SPSS 21.

5. Results and analysis

The objectives of the study are addressed here for exploring the research findings.

5.1 Analysing the distribution of the sample IPOs into the various categories of issue size of IPOs

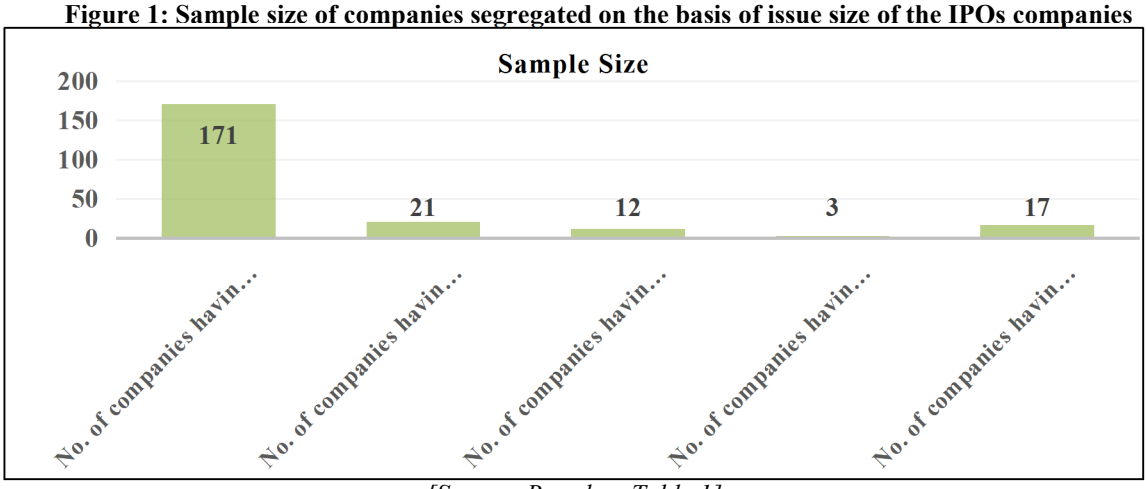
Issue size of the IPOs companies means the number of shares issued at the time of IPO. The categories are divided in this section as follows: issue size less than or equal to 200 lakhs, issue size between 200 lakhs and 400 lakhs, issue size between 400 lakhs and 600 lakhs, issue size between 600 lakhs and 800 lakhs and issue size greater than 800 lakhs. Under each of these categories the sample number of companies are found out to conduct the desired analysis.

Table 1: Sample size of companies segregated on the basis of issue size of the IPOs companies

Categories of Issue Size	Sample Size
No. of companies having issue size less than or equal to 200 lakhs equity shares	171
No. of companies having issue size greater than 200 lakhs and less than or equal to 400 lakhs equity shares	21
No. of companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs equity shares	12
No. of companies having issue size greater than 600 lakhs and less than or equal to 800 lakhs equity shares	3
No. of companies having issue size greater than 800 lakhs equity shares	17
Total	**224**

[Source: Compilation of Secondary Data using MS Excel 2016]

Figure 1: Sample size of companies segregated on the basis of issue size of the IPOs companies



[Source: Based on Table 1]

Findings

From table 1 and figure 1, maximum number of companies are seen to have issue size less than or equal to 200 lakhs. Out of the other four categories, the least number of sample size is in the category four where companies have issue size greater than 600 lakhs and less than or equal to 800 lakhs. The data is highly skewed as 171 companies fall in the first category out of the 224 sample IPOs.

5.2 Exploring the average initial returns of the sample IPOs from each of the categories on the basis of issue size of the IPOs

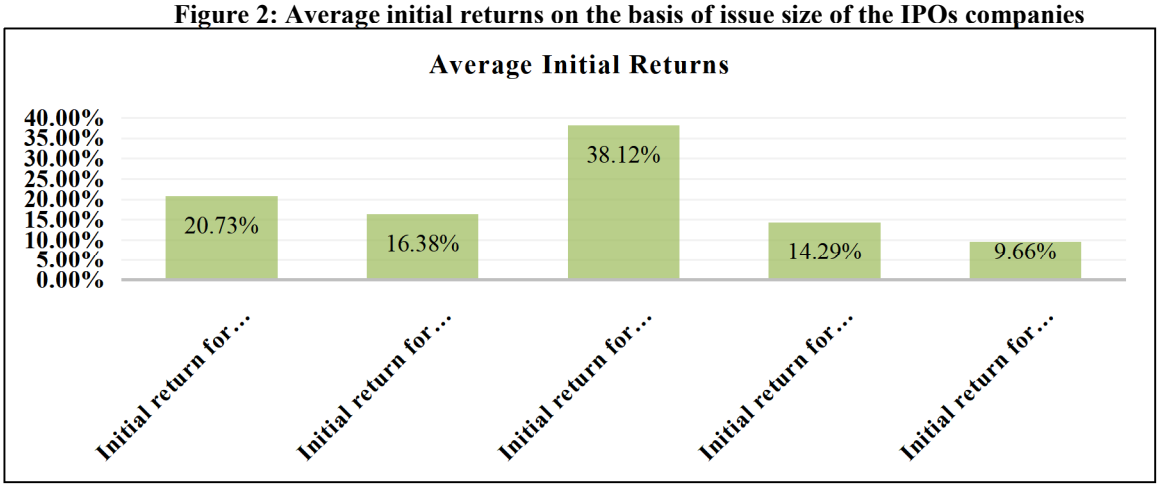
The average initial returns are computed for each of the categories on the basis of issue size of the IPOs.

Table 2: Average initial returns on the basis of issue size of the IPOs companies at the time of issuing IPOs

Categories of Issue Size	Sample Size	Average Initial Returns
Initial return for companies having issue size less than or equal to 200 lakhs equity shares	171	20.73%
Initial return for companies having issue size greater than 200 lakhs and less than or equal to 400 lakhs equity shares	21	16.38%
Initial return for companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs equity shares	12	38.12%
Initial return for companies having issue size greater than 600 lakhs and less than or equal to 800 lakhs equity shares	3	14.29%
Initial return for companies having issue size greater than 800 lakhs equity shares	17	9.66%

[Source: Compilation of Secondary Data using MS Excel 2016]

Figure 2: Average initial returns on the basis of issue size of the IPOs companies



[Source: Based on Table 2]

Findings

It is seen (refer to table 2 and figure 2) that the average initial return is highest for companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs. Only 12 such companies are there in the sample under this category. It is only possible to determine with the help of one sample t-test as to whether this average initial return is statistically significant or not.

5.3 Examining the average MAARs of the sample IPOs from each of the categories on the basis of issue size of IPOs

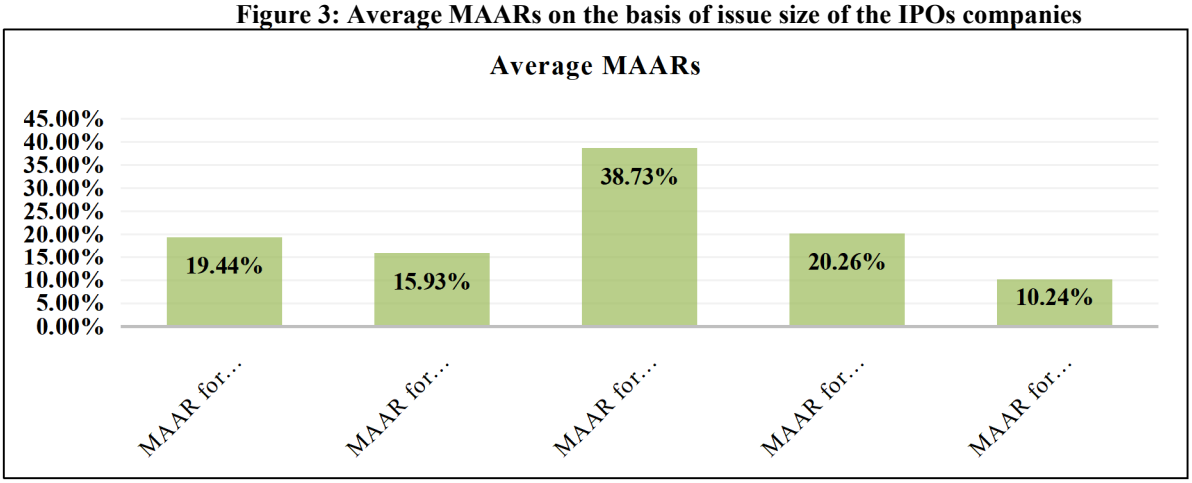
The average MAARs are computed for the sample IPOs on the basis of the categorical division of the IPOs on the basis of issue size of the IPOs.

Table 3: Average MAARs on the basis of issue size of the IPOs companies

Categories of Issue Size	Sample Size	Average MAARs
MAAR for companies having issue size less than or equal to 200 lakhs equity shares	171	19.44%
MAAR for companies having issue size greater than 200 lakhs and less than or equal to 400 lakhs equity shares	21	15.93%
MAAR for companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs equity shares	12	38.73%
MAAR for companies having issue size greater than 600 lakhs and less than or equal to 800 lakhs equity shares	3	20.26%
MAAR for companies having issue size greater than 800 lakhs equity shares	17	10.24%

[Source: Compilation of Secondary Data using MS Excel 2016]

Figure 3: Average MAARs on the basis of issue size of the IPOs companies



[Source: Based on Table 3]

Findings

After adjusting for the market changes, we arrive at MAAR of the IPOs. The highest MAAR is for the third category where the issue size of the companies ranges between 400 lakhs and 600 lakhs (refer to table 3 and figure 3). The average MAARs are around the similar level as the average initial returns. However, due to the adjustments, the MAARs are either greater or lesser than the corresponding average initial returns.

5.4 Investigating the average annualised returns of the sample IPOs from each of the categories on the basis of issue size of IPOs

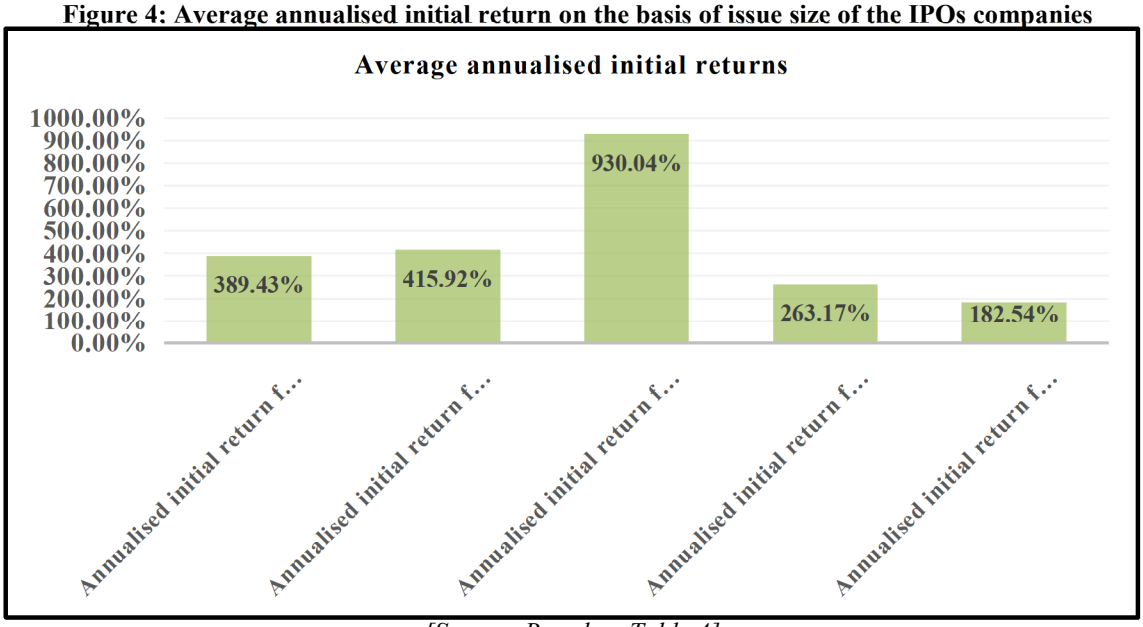
The average annualised initial returns are computed here for each of the categories on the basis of issue size of IPOs.

Table 4: Average annualised initial returns on the basis of issue size of the IPOs companies

Categories of Issue Size	Sample Size	Average annualised initial returns
Annualised initial return for companies having issue size less than or equal to 200 lakhs equity shares	171	389.43%
Annualised initial return for companies having issue size greater than 200 lakhs and less than or equal to 400 lakhs equity shares	21	415.92%
Annualised initial return for companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs equity shares	12	930.04%
Annualised initial return for companies having issue size greater than 600 lakhs and less than or equal to 800 lakhs equity shares	3	263.17%
Annualised initial return for companies having issue size greater than 800 lakhs equity shares	17	182.54%

[Source: Compilation of Secondary Data using MS Excel 2016]

Figure 4: Average annualised initial return on the basis of issue size of the IPOs companies



[Source: Based on Table 4]

Findings

The range of the average annualised initial returns is quite wide between 182% and 930% (refer to table 4 and figure 4). The highest average annualised initial return is for the companies having issue size between 400 lakhs and 600 lakhs, at 930.04%. The average annualised initial returns are adjusted initial returns on the basis of the annualising factor. The average annualised initial returns bar chart is very much similar to that of the average initial returns or average MAAR chart.

5.5 Studying the average annualised MAARs of the sample IPOs from each of the categories on the basis of issue size of the IPOs

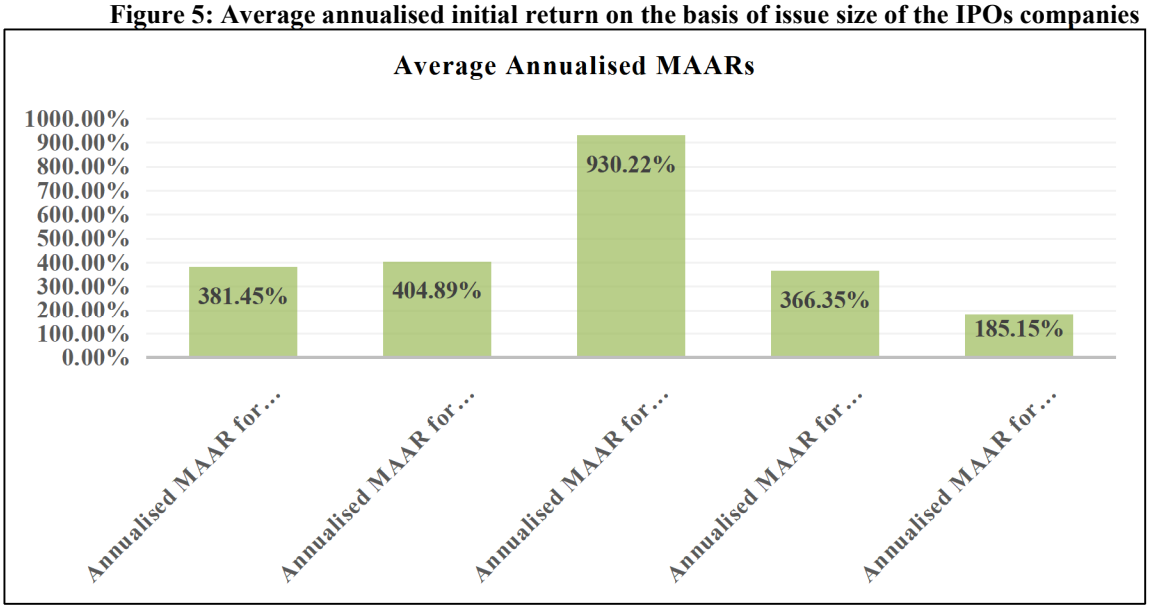
Finally, the average annualised MAARs are computed for the sample IPOs. On the basis of issue size of the IPOs companies, the sample IPOs are grouped.

Table 5: Average annualised MAARs on the basis of issue size of the IPOs companies

Categories of Issue Size	Sample Size	Average Annualised MAARs
Annualised MAAR for companies having issue size less than or equal to 200 lakhs equity shares	171	381.45%
Annualised MAAR for companies having issue size greater than 200 lakhs and less than or equal to 400 lakhs equity shares	21	404.89%
Annualised MAAR for companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs equity shares	12	930.22%
Annualised MAAR for companies having issue size greater than 600 lakhs and less than or equal to 800 lakhs equity shares	3	366.35%
Annualised MAAR for companies having issue size greater than 800 lakhs equity shares	17	185.15%

[Source: Compilation of secondary data using MS Excel 2016]

Figure 5: Average annualised initial return on the basis of issue size of the IPOs companies



[Source: Based on Table 5]

Findings

It is evident (refer to table 5 and figure 5) that the average annualised MAAR ranges between 185% and around 930%. The highest average annualised MAAR is noticed for the companies having issue size between 400 lakhs and 600 lakhs at 930.22%. The average annualised MAARs are adjusted MAARs on the basis of the annualising factor. The average annualised MAARs bar chart is very much similar to that of the average initial returns or average MAAR chart.

5.6 Testing the statistical significance of the average initial returns, average MAARs, average annualised initial returns, average annualised MAARs of each category of issue size of the IPOs companies

Under this section the four measures of average returns considered, namely, average initial returns, average MAARs, average annualised initial returns, average annualised MAARs are tested for statistical significance with the help of one-sample t-test.

Table – 6: Result of One-Sample t-test of average initial return

Categories of Issue Size	**Average Initial Return for 1st Day (in %)**	**Statistic**	**P-Value**	**Decision Rule** *(At 5% level of significance)*	**Decision on H_0:** *(H_0:The average initial return as on 1st Day after listing is equal to 0)*
Initial return for companies having issue size less than or equal to 200 lakhs equity shares	20.73%	6.716	0.000	P-Value < 0.05	Rejected
Initial return for companies having issue size greater than 200 lakhs and less than or equal to 400 lakhs equity shares	16.38%	3.387	0.003	P-Value < 0.05	Rejected
Initial return for companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs equity shares	38.12%	2.300	0.042	P-Value < 0.05	Rejected
Initial return for companies having issue size greater than 600 lakhs and less than or equal to 800 lakhs equity shares	14.29%	2.623	0.120	P-Value > 0.05	Accepted
Initial return for companies having issue size greater than 800 lakhs equity shares	9.66%	1.147	0.268	P-Value > 0.05	Accepted

[Source: Compilation of Secondary Data using SPSS 21.0]

Findings

From the above table it is evident that the null hypothesis is rejected at 5% level of significance for the first three categories. Therefore, the average initial returns as on the listing day of IPOs are significantly different from 0 for the first three categories. The last two categories where the average initial returns are 14.29% and 9.66% are not statistically significant. The highest average return of 38.12% is statistically significant.

Table – 7: Result of One-Sample t-test of average MAAR

Categories of Issue Size	**Average MAAR for 1st Day (in %)**	**Statistic**	**P-Value**	**Decision Rule** *(At 5% level of significance)*	**Decision on H_0** *(H_0:The average MAAR as on 1st Day after listing is equal to 0)*
MAAR for companies having issue size less than or equal to 200 lakhs equity shares	19.44%	6.455	0.000	P-Value < 0.05	Rejected
MAAR for companies having issue size greater than 200 lakhs and less than or equal to 400 lakhs equity shares	15.93%	3.126	0.005	P-Value < 0.05	Rejected
MAAR for companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs equity shares	38.73%	2.367	0.037	P-Value < 0.05	Rejected
MAAR for companies having issue size greater than 600 lakhs and less than or equal to 800 lakhs equity shares	20.26%	3.332	0.079	P-Value > 0.05	Accepted
MAAR for companies having issue size greater than 800 lakhs equity shares	10.24%	1.297	0.213	P-Value > 0.05	Accepted

[Source: Compilation of Secondary Data using SPSS 21.0]

Findings

It is concluded from the above table that the t-test of the average MAARs show a similar result as seen in the previous section. The null hypothesis is rejected at 5% level of significance for the first three categories. Therefore, the average initial returns as on the listing day of IPOs are significantly different from 0 for the first three categories. The highest average MAAR of 38.73% is statistically significant.

Table – 8: Result of One-Sample t-test of average annualised initial return

Categories of Issue Size	**Average MAAR for 1st Day (in %)**	**Statistic**	**P-Value**	**Decision Rule** *(At 5% level of significance)*	**Decision on H_0** *(H_0: The average annualised initial return as on 1st Day after listing is equal to 0)*
Annualised initial return for companies having issue size less than or equal to 200 lakhs equity shares	389.43%	7.310	0.000	P-Value < 0.05	Rejected
Annualised initial return for companies having issue size greater than 200 lakhs and less than or equal to 400 lakhs equity shares	415.92%	3.818	0.001	P-Value < 0.05	Rejected
Annualised initial return for companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs equity shares	930.04%	2.498	0.030	P-Value < 0.05	Rejected
Annualised initial return for companies having issue size greater than 600 lakhs and less than or equal to 800 lakhs equity shares	263.17%	2.902	0.101	P-Value > 0.05	Accepted
Annualised initial return for companies having issue size greater than 800 lakhs equity shares	182.54%	1.234	0.235	P-Value > 0.05	Accepted

[Source: Compilation of secondary data using SPSS 21.0]

Findings

From the above table, it is seen that the null hypothesis is rejected at 5% level of significance for the first three categories. Therefore, the average annualised initial returns as on the listing day of IPOs are significantly different from 0 for the first three categories. The highest average annualised initial return of 930.04% is statistically significant. It, therefore, portrays underpricing.

Table – 9: Result of One-Sample t-test of average annualised MAAR

Categories of Issue Size	**Average MAAR for 1st Day (in %)**	**Statistic**	**P-Value**	**Decision Rule** *(At 5% level of significance)*	**Decision on H_0** *(H_0: The average annualised MAAR as on 1st Day after listing is equal to 0)*
Annualised MAAR for companies having issue size less than or equal to 200 lakhs equity shares	381.45%	7.090	0.000	P-Value < 0.05	Rejected
Annualised MAAR for companies having issue size greater than 200 lakhs and less than or equal to 400 lakhs equity shares	404.89%	3.602	0.002	P-Value < 0.05	Rejected
Annualised MAAR for companies having issue size greater than 400 lakhs and less than or equal to 600 lakhs equity shares	930.22%	2.603	0.025	P-Value < 0.05	Rejected
Annualised MAAR for companies having issue size greater than 600 lakhs and less than or equal to 800 lakhs equity shares	366.35%	4.606	0.044	P-Value < 0.05	Rejected
Annualised MAAR for companies having issue size greater than 800 lakhs equity shares	185.15%	1.291	0.215	P-Value > 0.05	Accepted

[Source: Compilation of Secondary Data using SPSS 21.0]

Findings

Table 9 shows that the null hypothesis is rejected at 5% level of significance for the first four categories. Therefore, the average annualised initial returns as on the listing day of IPOs are significantly different from 0 for the first four categories. This means the highest average annualised MAAR is statistically significant. Also, annualised MAAR for the fourth case where the companies have issue size greater than 600 lakhs and less than or equal to 800 lakhs is statistically significant unlike the previous cases in this section.

6. Conclusion

Maximum number of companies are seen under 400 and 600 lakhs equity shares issue. Under all the three groups, the first three categories namely, issue size less than 200 lakh equity shares, 200 to 400 lakh equity shares and 400 to 600 lakh equity shares show significant underpricing under all the measures of average returns. Issue size and the issue price of the IPOs are interrelated. Based on the prospective issue price of the IPOs, the issue size is determined. It is interesting to note that the significant underpricing is seen for IPOs, which have issued comparatively a lesser number of equity shares in the market. Under all the measure of the returns, the average returns from such categories are significant. Thus, these aforementioned categories show significant underpricing.

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