PRICING AND PERFORMANCE EVALUATION OF INITIAL PUBLIC OFFERINGS (IPO'S): EVIDENCE FROM INDIAN STOCK MARKETS.

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Abstract: Initial Public Offerings (IPOs) is one of the main strategy of going public adopted by firms across the globe, hence marks as an important pivotal moment in the life of a concern, the study seeks to investigate two interdependent phenomenon, i.e. pricing and performance of IPOs from Indian capital markets, the study is based upon a sample of 290 IPO stocks that entered the markets during 2007 up to 2017. The analysis is based on custom techniques like wealth relative index and MAERs. The empirical results of the study conclude that an aggregate of 17.90 percentage level of underpricing is evident amongst IPO issues, furthermore the study highlights a favorable 9 month trend in the performance of IPOs, post which the performance degrades severely. The study also throws lights over several aspects for consideration while cherry-picking to invest in IPO issues to investors in near future.

Index Terms **- Price, Performance, IPOs, Underpricing, Capital markets.**
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I. INTRODUCTION

Financial resources and financial management are vital and inevitable functions of any business or concern. Finance is the blood that flows through the veins of business and keeps it alive and functioning. Acquiring financial resources is one of the most crucial question which business needs to answer through proper knowledge and insight. Funds can be raised through numerous sources like through loans or through debt financing or may be through equity either to the private or to public and so on. IPO is also one of the source of finance extensively used by corporates across the globe to raise huge finance from the markets through issue of its common stocks (equity) to the general public for subscription. The decision to go public is by and far the most significant decision that a firm takes in its entire life cycle. IPOs are one of such route, IPOs stands for Initial Public Offerings which are the sale of common stocks (equity) of a concern being already established or newly formed to the mass general public for the very first time, and it is thus regarded as a process of going public or floating. IPOs is one of the largest and most celebrated source of funds with a long and indefinite maturity it is a route through which corporates raise funds to finance project expenses as well as to get global exposure through listing at stock exchanges. IPO proceeds are a great and rich source of finance for business concerns, due to its importance, it has been one of the highly studied topic in finance. One of the section of literature has been always concerned with gazing into the long run performance of such decisions, the current study also seeks to shed some light over the same phenomenon, to be more precise the study is aimed at evaluating the pricing aspects and the long run performance of IPOs floating on Indian stock markets i.e. NSE and BSE.

A number of empirical studies have offered suitable justifications toward two mains aspects of IPOs, i.e. underpricing and underperformance, the significance of underpricing is due its contradiction to the efficient market hypothesis, and hence several authors studies this phenomenon and reported significant levels of underpricing in IPO issues across the globe, moreover the issues with higher level of underpricing reported worse performance in the long run (Ritter 1991). Generally the post listing performance is referred to as aftermarket performance, and it is one of the most puzzling issue to be handles with respect to methodologies, influencing factors, time frames and so on.

II. LITERATURE REVIEW

McDonald and Fisher (1972) investigated the price behaviors of unseasoned equity offerings over to a period of 1969-70 the findings indicates that large returns had been earned by the initial subscribers of the issue and hence proved to be very profitable for a short period of time **Ritter (1984)**, analyzed the hot issues from January 1980 and extending to march 1981, the study indicated that during the period the average initial returns on the first day of trading accounted for 48.4 percent, this returns when compared to the average initial returns of 16.3 percent in the 'Cold Issue' market. **Dawson (1987)** studied price performance of IPOs in three Asian stock markets namely Hong Kong, Singapore and Malaysia for a period extending from 1978 to 1984, promising facts reveals that the post market returns of Hong Kong and Singapore were significantly down by 9.3 % and 2.7 % respectively. **Aggarwal and Rivoli (1990)** analyzed the long run performance comprising a sample of 1598 IPOs during 1977 to 1987. The study showed that the returns earned by the investors buying stock on day 1 at closing price and holding the same up to 250 days earned a significantly negative returns of (-13.73%) **Ritter (1991)** the study revealed facts that in the three year period after going public firms significantly underperformed when compared to other firms that matched in terms of size and industry. However when the IPOs measured gave an initial average return of 16.4 percent on the first day from the offer price to day end traded price. **Keasey and Short (1992)** the study found 14% as the average level of underpricing. **Agarwal et al. (1993)** analyzed the performance of IPOs in short term as well as long term based on a sample of 62 Brazilian IPOs from 1980 to 1990, 36 Chilean

IPOs from 1982 to 1990 and 44 Mexican IPOs in 1987 to 1990. The results reveal promising facts with respect to initial one day returns which are found to be 78.5 per cent, 16.3 per cent and 2.8 per cent for Brazilian, Chilean and Mexican IPOs respectively. The market correlation with the standard and poor 500 index for each region of IPOs were 0.12 for Brazil, 0.40 for Chilean , and 0.54 for Mexican IPOs during a five year period ending on 1991. The long run Mean Adjusted Market Returns were -47%, -23.7% and -19.6% for Brazilian, Chilean and Mexican IPOs respectively. The results of the study are consistent and reveals that even underpriced at the initial stages the stocks have underperformed in a long run. **Levis M. (1993)** the results indicates that the average first day returns accounted for 14.3 percent it was also reported that the stocks underperformed to the extent of -11.4 % after three years of time period. **Kunz and Agarwal (1994)** carried on a study and examined the IPOs at Swiss stock exchange and studied 42 firms that went public during the period 1983 to 1989. The results hence indicated that the average initial returns of 35.8 per cent were earned by the stocks.

Shah (1995) conducted a study of IPOs with a sample of 2056 IPOs which came to the market during the period of 1991 to 1995 in Indian. The database based analysis reveal that on an average the prices of stocks at the first day of listing was 105.6 percent over and above the offer price which significantly relate to the extent of underpricing being 3.8 percent per week. Singh and **Mittal (2005)** attempted to evaluate the long run performance of IPOs in India based on a sample of 500 IPOs from 1992 to 1996. The study revealed that up to a period of three years a total of 72 firms earned excess returns for six months and then declined sharply moreover investors holding stock for a period of 2 to 3 years experienced negative returns over time**. Mishra (2010)** examined short run performance of IPOs in India based on a sample of 235 IPOs from 1998 to 2008. The study shows that there exist a mean underpricing equating to 14.45% also the study is evident that underpricing prevailed in 2003 increasing over time was very high during the 'hot issues' market of 2007 and decreased in the subsequent year 2008. **Ramesh and Dhume (2015)** examined 150 IPOs in India from 2007 to 2011 and evaluated the short and long run price performance of IPOs considering gaps of 1 month, 3 month, 6 months, 1 year, 2 year and 3 years gap. The findings reveal that overpricing exist in the market moreover overpricing is associated with long run time period than in short run

III. RESEARCH METHODOLOGY

Data Source and Collection:

The current study is completely based on secondary data. The needed data has been collected from the official websites of NSE and BSE stock exchanges. The period of the study is chosen for 10 years from 2001 to 2017. Daily closing prices of stocks and the market index has been collected over the above mentioned period. A sample of 290 IPOs have been chosen for the entire period out of the entire population presented in the following table 2.

Table 2. Sample Characteristics

Year of Issuance	Number of IPOs	Percentage(%) out of Total
2007	74	25.52
2008	27	9.31
2009	20	6.90
2010	53	18.28
2011	22	7.59
2012	10	3.45
2013	03	1.03
2014	04	1.38
2015	20	6.90
2016	24	8.28
2017	33	11.38
Total	**290**	**100.00**

Source: Self Computed based on the sample

Analysis Methodology:

In order to empirically test the pricing and performance of IPOs, numerous tests and various statistical tools, techniques, and models widely documented and proposed by experts for through analysis of data are used. The study is undertaken to evaluate both short term as well as long term performance of IPOs hence the well documented techniques employed in consideration to this study are discussed as follows.

The listing day returns (Ri) of IPO is calculated using the following formula:

$$R_i = \frac{P_1 - P_0}{P_0} * 100 \ldots\ldots\ldots (1)$$

Where, R_i = Listing Day Initial Returns or Raw Returns for the stock

P_1 = Closing price at the day of listing

P_0 = Offer price or Issue price

The Adjusted Excess Returns (MAER) are computed using the following formulae.

$$MAER = \frac{P_1 - P_0}{P_0} - \frac{M_1 - M_0}{M_0} * 100 \ldots\ldots\ldots (2)$$

Where, MAER = Market Adjusted Excess returns

P_1 = Closing price at the day of listing

M_1 = Closing value of market index on first day of trading

P_0 = Offer price or Issue price

M_0 = Closing value of market index on offer closing day.

In India as per SEBI guidelines the firms issuing IPOs are required to be listed over a stock exchange within T+6 working days hence different companies list at different intervals and period of time thus to normalize this variation Annualized returns are estimated which are than multiplied to the Raw returns and the MAER by the following factor.

$$Annualizing\ Factor = \frac{365}{After\ Market\ Trading\ Lead\ Time} \ \ldots\ldots\ldots\ (3)$$

The extent of Underpricing with respect to IPOs on the basis of the initial returns are estimated so as to determine the level of underpriced issues. The formulae to estimate the level of underpricing is as follows

$$R_t = \sum_{i=1}^{n}\ \frac{Rit}{n}\ \ldots\ldots\ldots\ (4)$$

Where

R_t = is the average Raw/benchmark adjusted underpricing for the sample of IPOs

R_{it} = is the average Raw/benchmark adjusted underpricing for the stock I and n is the sample size.

To analyze the medium and long term performance of IPOs another significant widely used and documented technique is Wealth relative (WR) index. This index is proposed by Ritter and Levis for calculating the performance of IPOs vis-à-vis the market. The index value relatively greater then unity (1) implies that the stock has outperformed and an index value less than 1 indicate under performance. The WR_{it} for a stock p for t period of time is calculated as under.

$$WR_{it} = \frac{1+\frac{1}{n}\sum_{i=1}^{n}\ r(it)}{1+\frac{1}{n}\sum_{i=1}^{n}\ r(mt)}\ \ldots\ldots\ldots\ (5)$$

Where,

$r_{it} = \frac{R_{it}}{100}$ 　　　　 $r_{mt} = \frac{R_{mt}}{100}$ 　　and　 n = Total number of IPOs in the sample.

Objectives of the study:
1. To analyze the initial listing performance of IPOs in India.
2. To analyze the price performance of Indian IPOs from 1 month, 2 months, 3 months, 6 months, 9 months, 1 year, 2 years and 3 years post listing.
3. To empirically test the presence of underpricing/overpricing of IPOs in Indian market.

Research Hypothesis:
1) H_0: There is no significant difference in the initial raw returns of IPOs and the market returns, hence no presence of underpricing.
2) H_0: There is no significant difference in the long run post listing returns of IPOs and the market returns.

IV. EMPIRICAL ANALYSIS

Underpricing is a universal phenomenon in IPOs across the globe, as advocated by many scholars through their literature and research work. The current study also throws light over the same phenomenon and test its validity with respect to the Indian capital market issues. Table 3 examines the significant underpricing in the IPOs listed over both the NSE as well as BSE stock exchanges from 2007 to 2017 period.

Table 3
Listing Performance underpricing level.

	Characteristics	Mean	Maximum	Minimum	Positive Returns (%)	Negative Returns (%)
	Raw Returns	17.90*	242	-66	34.8	65.2
MAER	**Nifty**	19.19*	243	-67	37.8	62.8
	Sensex	18.42*	242	-67	36.9	63.1
Annualized	**Raw Returns**	280.02*	3929	-1733	34.8	65.2
	MAER-Nifty	283.94*	3887	-1743	37.8	62.8
	MAER-Sensex	286.60*	3892	-1744	36.9	63.1

*Significantly Different from Zero at 1 Percent Level

The average raw returns were 17.90 percent from the IPOs however the MAERs were 19.19 percent and 18.42 percent adjusted with CNX Nifty and BSE Sensex. A maximum of 242 percent of raw returns was provided by stocks and the minimum of -66 percent was provided by certain stock. The raw returns when annualized however accounted for 280.02 percent and the annualized MAERs were 283.94 and 286.60 percent respectively. The results indicate that 34.80 percent of companies have provided positive returns that signifies an underpricing scenario of IPOs, moreover 65.20 percent of companies of the sample have provided negative returns which indicate an overpricing scenario. The results obtained from the study are consistent with

other Indian studies like **Narasimhan and Ramana (1995), Shah (1995), Madhusoodanan and Thiripalraju (1997), Pandey and Kumar (2001), Singh and Mittal (2005), Krishnamurti and Kumar (2002).**

The medium and long run performance of the sample IPOs are provided as under table 4 it gives account of post listing performance in terms of the raw returns from IPOs. The post 1 month of listing returns is significant and account to 13.96 percent, for 2 months the returns were 14.29 percent, for 3 months returns were 15.47 percent, for 6 months the returns were 22.10 percent however there has been an increasing trend with returns provided in the 9th month returns decreased to 16.62 percent and further the returns turned negative with 1, 2 & 3 years post listing which signifies that in the long run the underpricing does not prevail also the stock's performance to degrades in this period of time after its listing which are consistent with the extant literature in this area of study. The wealth relative index values were greater than 1 up to 9 months which signifies that the stock has outperformed the market index i.e. Nifty & Sensex, however post 9 months the value reduced to below 1 signifying underperformance.

Table 4
Post listing performance

| Characteristics		1-M	1-M	3-M	6-M	9-M	1-Yr	2-Yr	3-Yr
Wealth Relative (Nifty)		1.02	1.01	1.02	1.08	1.02	0.84	0.83	0.76
Wealth Relative (Sensex)		1.03	1.03	1.04	1.1	1.04	0.85	0.84	0.77
	Raw Returns	13.9*	14.3*	15.5*	22.1*	16.6*	-7.07	-1.7	-12.9**
MAERR	**Nifty**	2.48	1.48	2.59	9.2**	2.72	-17.6*	-23.1*	-35.0*
	Sensex	3.85	3.22	4.88	10.9**	4.58	-5.7*	-21.6*	-34.0*
Annualized	**Raw Returns**	260.2*	284.8*	307.3*	454.3*	376.0*	78.67	159.71	-123.3
	MAER-Nifty	-175.7**	-176.1**	-151.8**	-36.06	-156.8	-445.8*	-381.0*	-528.7*
	MAER-Sensex	-132.15	-127.08	-98.27	-10.76	-108.1	-400.9*	-345.7*	-506.3*

(*), (**), (***) Significantly different from zero at 1%, 5% & 10% levels respectively.

The analysis of factors and their impact on the performance of IPOs has also been carried out, several factors like years of listing, listing delay, IPO size, IPO offer price, Period characteristics, subscription ratio etc. have been analyzed as further.

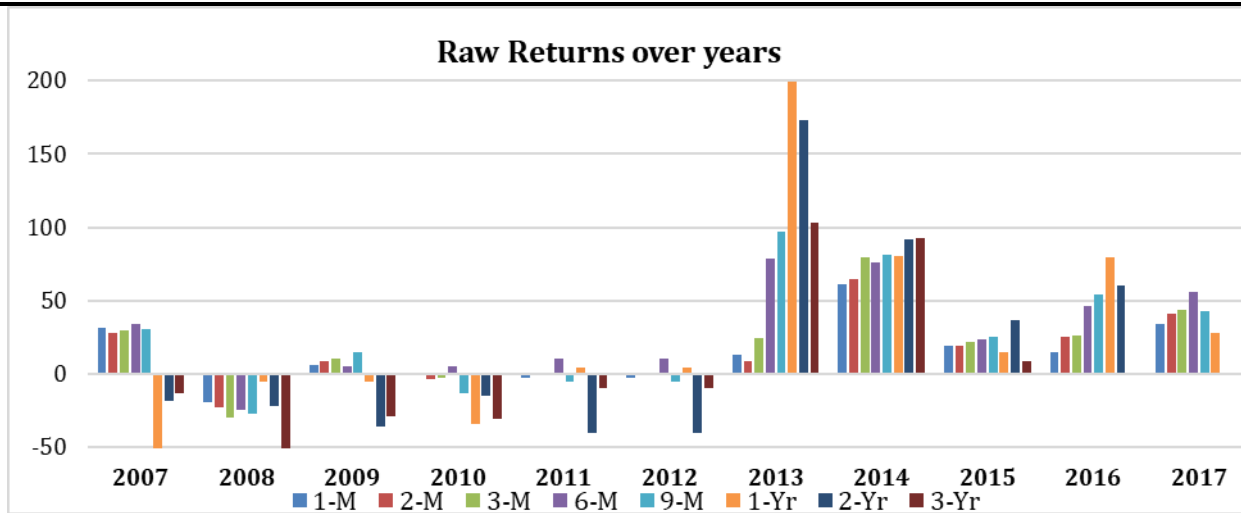**i.   Performance based on year of issue**

On the basis of year in which the issue was open and got listed the analysis of wealth relative index and raw returns can be seen in the following figures i.e. fig. 1 and fig 2 respectively. Fig 1. depicts the analysis of wealth relative index computed for multiple years, on an average the index value has fallen post 9 months, which states that the IPOs performed over the market and generated good value up to 9 months only however post 9 months the index value declined, provided this trend in mostly seen in IPOs issued prior to 2013, however most IPOs issued after 2013 have not followed this trend.

Fig. 1. Wealth relative index for years ranging from 2007 to 2017,
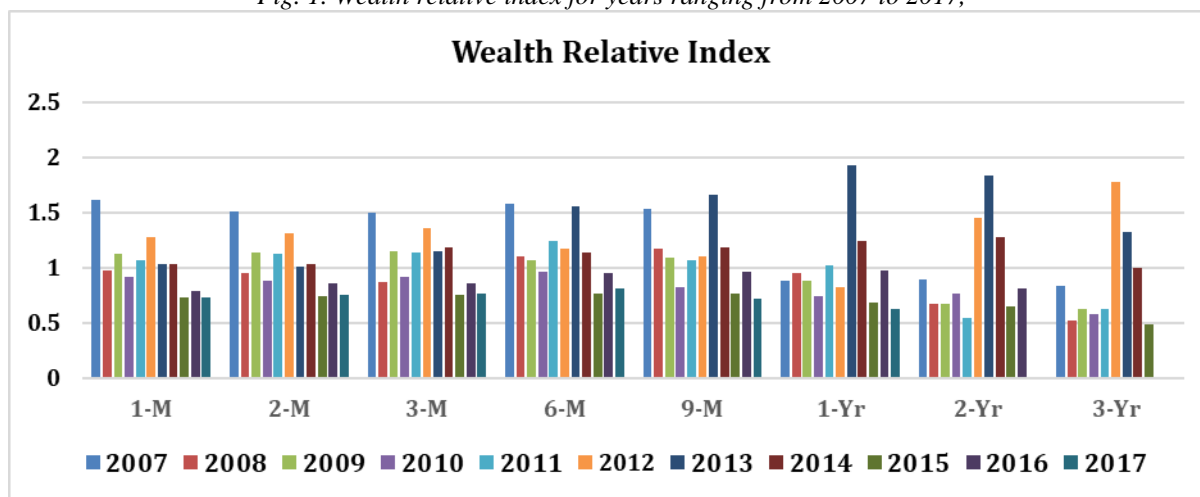
The raw returns earned by IPO stocks have been compiled over the set of years, the results indicate that all the IPOs issued on or after 2013 have provided positive returns throughout up to 3 years, however all the IPOs stocks that have been issued i.e. floated since 2007 up to 2012 have significant negative returns over the period. It thus states that most of the IPOs that were floated during this period were unfavorable for fellow investors in the longer run aspects, and those who have had invested in IPO stocks on or after 2013 have been securing a favorable position throughout even in the longer run time frame. Among the years 2007 & 2008 marked the lowest negative returns of (51.2) & (54.4) % respectively and the highest positive returns were marked by IPOs of 2013, i.e. 199.37%.

Fig. 2. Raw Returns for years ranging from 2007 to 2017.

ii.   Performance based on period characteristics (boom/slump period issues).

The following figure 3 depicts the raw returns produced by IPO stocks with consideration to the period characteristics. With respect to the boom period raw returns have been positive up to 9 months of time frame, however post of which have shown very drastic fall and higher negative extent of returns, the returns earned up to 9 months were 20.4%, 20.8%, 22.4%, 30.3%, and 23.4% respectively. The slump period issues somewhat raised the similar outcome however with a lower value of raw returns on an average. Both the period have identified that post 9 months period the returns have been negative throughout which states that it's not advisable to hold IPOs for such a long time frame.

Fig. 3 Raw Return Analysis of IPOs of Boom & Slump period.
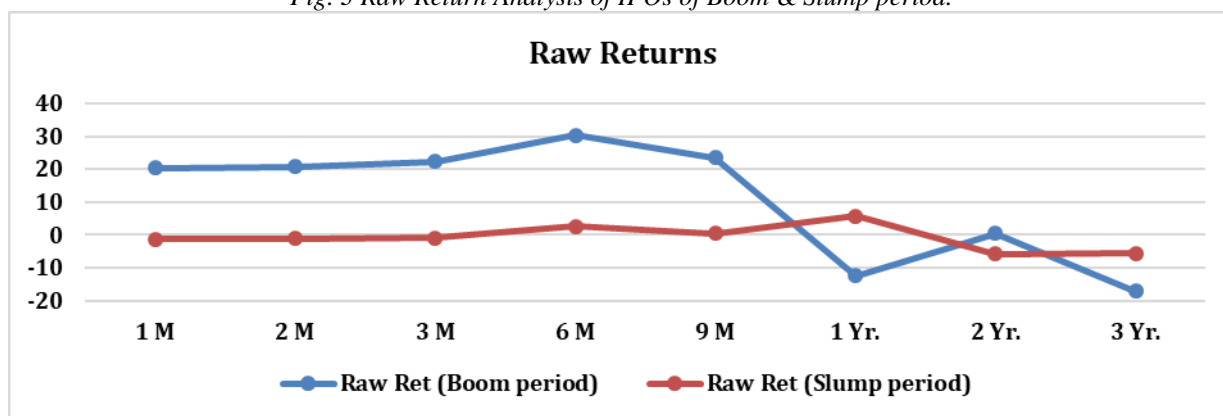
The wealth relative index values are depicted in fig. 4 the index value for boom as well as for slump period have been consistent and favorable for both the period characteristics up to 9 months, however post period analysis indicate unfavorable value hence holding stocks for such a long period is not a wise decision for an investor.

Fig. 4. Wealth Relative Index values projection for Boom and Slump period IPOs.
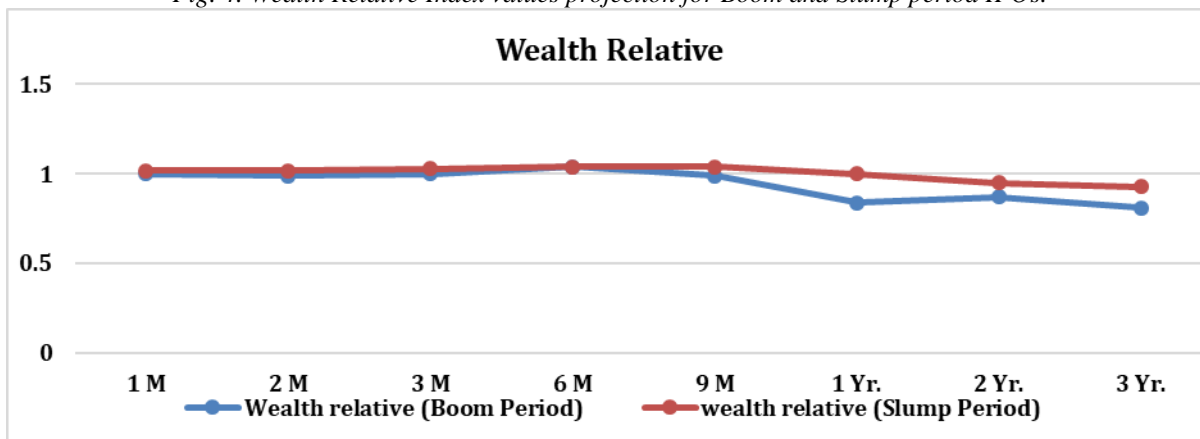

iii.   Performance based on lead time (listing delay).

The lead time is the lag in the time of closing of an issue and the instant of it getting listed over the stock exchanges, thus it is one of the signaling factor that justifies that good issues get listed quickly rather those which are not so good usually takes long time, however with a recent shift in this trend with SEBI making it acceptable to take a time of 30 days to get listed hence has reduced higher delays. Figure 5 provides insights to raw returns which indicate that the highest returns of 25.47% are provided by

IPOs with delay of 30 to 60 days, followed by delay of less than 15 days with 15.9% and from 15 days up to 30 days with 13.9%. Moreover any delay in listing above 60 days from the date of closure of the issue are not significant and also the results yet are inconclusive due to the fact of a smaller proportion of IPOs belonging to that category of delay. In general terms it is presumed that, IPOs that get listed as fast as possible over the exchange are better in comparison, so much so that they earn better returns too, however the analysis has supported the presumption as the IPOs which got listed in T + 15 days after is floating has provided positive and better raw returns throughout in comparison to others.

Fig. 5 Raw returns values projection for Listing delay effect of IPOs.
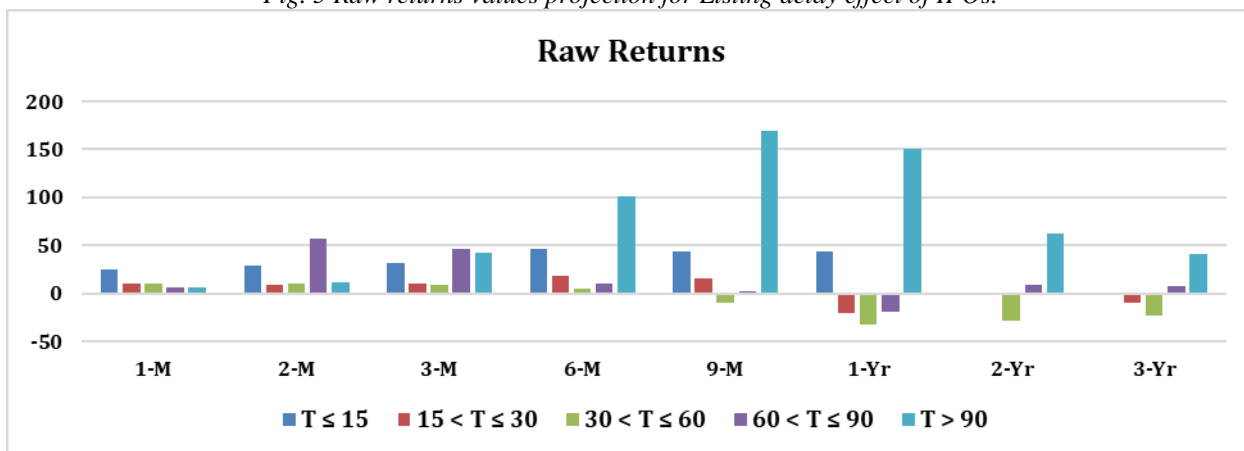
The wealth relative analysis of listing delay factor are discussed in the following figure 6. It can be seen from the figure that listing delay of less than 15 days is not so favorable as consistently the value of index was below unity, however the performance of IPOs belonging to the category of delay of about 15 days to 30 days have shown significantly better performance all throughout with index values greater than and equal to unity up to 9 months, the performance of IPOs of delay greater than 30 days up to 60 days have almost shown similar trend, however due to a smaller proportion of sample depicting delays greater than 60 days hence results cannot be considered significant and no inference can be drawn from the same as the values of the index are very high for this category.

Fig. 6 Wealth Relative Index values projection for Listing delay effect of IPOs.
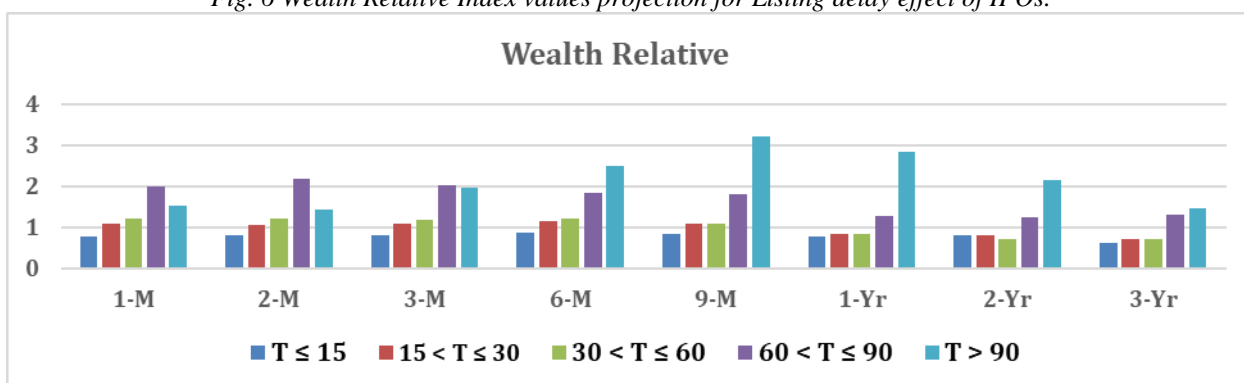
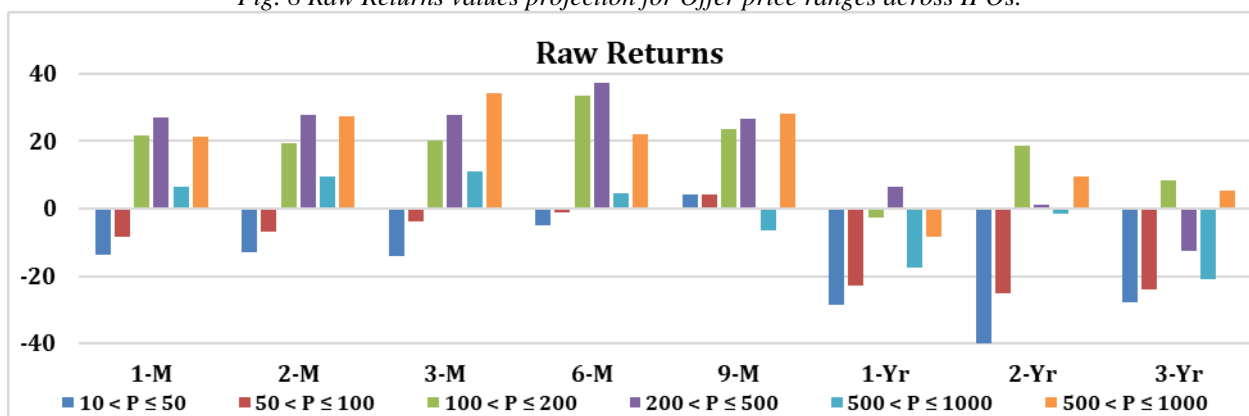### iv.   Performance of IPOs based on offer price.

The influence of offer price over the IPOs performance has been numerically mirrored below, According to the study of Shelly and Singh (2010), which stated that information that is contained in the prospectus of an issue send necessary signals, which are either intentional or otherwise to the potential investor that can largely influence their decision, hence one of the main signaling factor is offer price, it is an indicator of underpricing and value in fig. 7 the wealth relative index has been pictured which shows that across the range of offer price from Rs. 10 up to Rs. 1000 per share, the index value have been favorable only for price group of above Rs. 50 and up to Rs. 500 only, moreover the value have been declining post 9 months for all the offer price ranges relatively. Offer price of Rs. 100 up to Rs. 200 have been considered idle for investment as its relative wealth index have been above the base value i.e. 1, which indicate a favorable aspect to be considered, moreover the latter holds true that an investment for a long run should be as far as possible be avoided by a fellow investor as it can be evident from the analysis that it's not considered favorable.

Fig. 7 Wealth Relative Index values projection for Offer price ranges across IPOs.
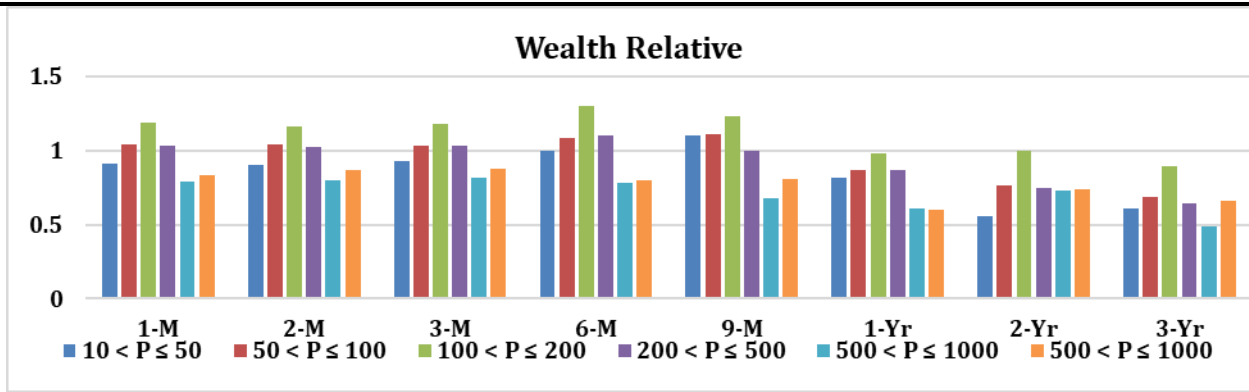
The subsequent fig. 8 highlights the raw returns on an average produced by stocks across the various offer price ranges, the results are so evident of the fact to hold such a stock of IPO only up to 9 months, as post of which shown negative raw returns earned by all of the price ranges, the results also reveal that only price ranges above Rs. 100 and up to Rs. 1000 have provided better positive returns throughout than as compared to offer prices below Rs. 100. The highest raw returns are provided by offer price range of Rs. 200 up to Rs. 500 which and followed by Rs. 500 up to Rs. 1000, which were approx. 37 % and 34% respectively.

Fig. 8 Raw Returns values projection for Offer price ranges across IPOs.
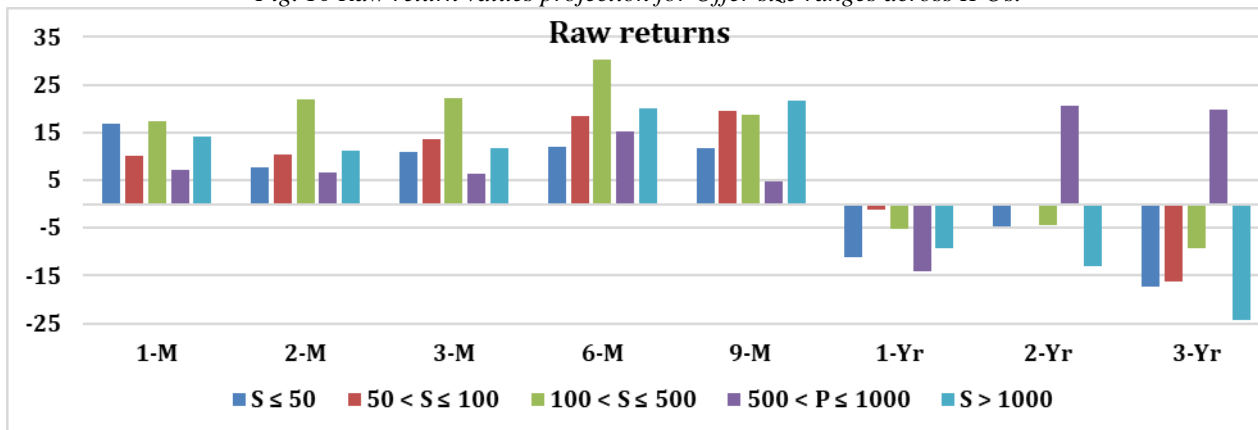

v.   Performance of IPOs based on offer size

An analysis of the post listing performance of IPOs based on the size of offer in the market reveals with respect to the wealth relative indicated in Fig. 9, that an offer size of 100 to 500 crore is most favorable as consistently up to 9 months it shows a trend of Wealth relative index higher than unity i.e. 1, which is considered favorable. However the higher trend is seen only up to 9 months. Similarly offer size of 5o crore to 100 crores and 500 crores to 1000 crore has also shown quite stable performance however this also lasted only up to 9 months only.

Fig. 9 Wealth Relative index projection for Offer Sizes ranges across IPOs.
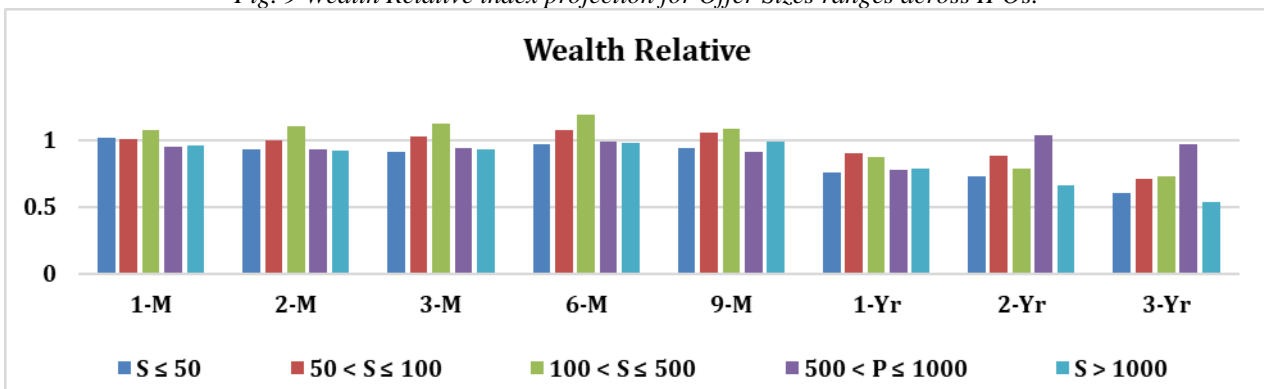
The raw returns provided by IPOs which have been segregated based on their offer sizes are shown in Fig. 10, as follows, The same 9 month long trend is being followed which can be seen, moreover nearly across all IPOs sizes, the raw returns are positive up to 9 months , and post of which are severely indicating negative returns. Highest returns are provided by offer size of 100 crore to 500 crore which were 30.21% in total, followed by offer size greater than 1000 crore also have provided better returns among the rest which were 21.7%. the analysis also show that the offer size of 500 crores to 1000 crores have provided positive returns in its 2nd and 3rd year of listing which act as an exception, that indicate an investor can duly invest unto such offer sizes as they a most likely to offer good returns not initially but in the very long run this returns accounted for 20.5% & 19.7% in 2nd and 3rd years respectively.

Fig. 10 Raw return values projection for Offer size ranges across IPOs.

## vi.   Performance of IPOs based on subscription ratio.

The performance of IPOs stocks as per the level of oversubscription is presented in table 4.14 as below. It is evident that relatively a higher extent of underpricing prevails with IPOs which were oversubscribed to the extent of greater than 5% and up to 100%, on the contrary a lower subscription below 5% has shown stable performance and lower extent of underpricing. The subscription ratio of IPOs indicate the extent to which the IPOs are being subscribed by general public hence it is one of the important indicator of success and or failure, the below fig. 11, depicts the wealth relative index values across various subscription ratio groups. The Subscription ratios group of above 100% is the most favorable as its showing a consistent performance throughout its post listing. However none of the other groups have shown such performance as the value is lower than 1.

Fig. 11 Wealth Relative index projection for Offer Sizes ranges across IPOs.
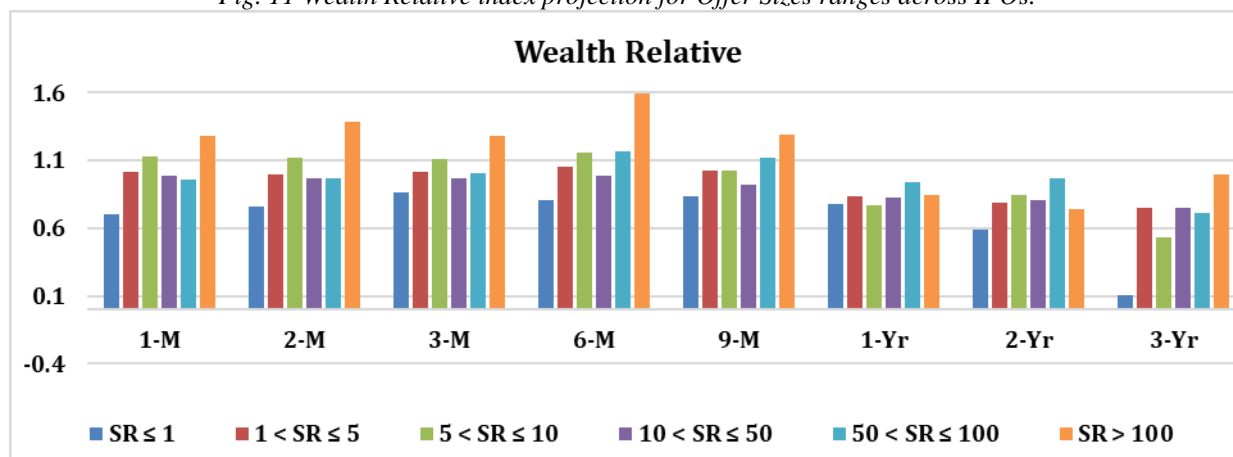
The raw returns earned by IPOs have been highlighted in fig. 12, below. Yet the highest raw returns are provided by the group with Subscription ratio above 100%, which were 57.15% followed by 36% provided by the group less than 100 & more than 50. This trend has been seen only up to 9 months post listing period, however in the 2nd & 3rd year the sub group 50 ≤ 100 and S > 1000 respectively.

Fig. 12 Raw return values projection for Offer size ranges across IPOs
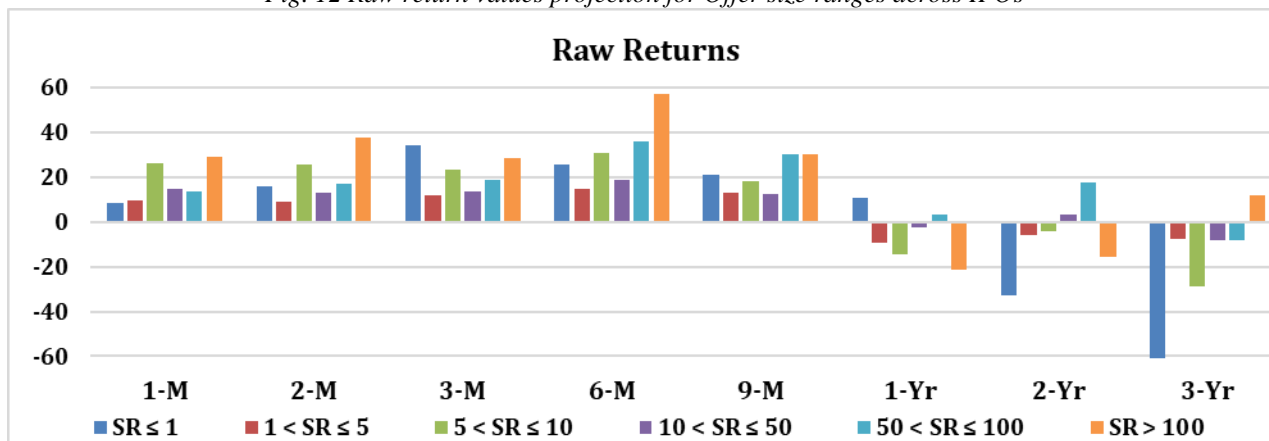
V. CONCLUSION

Financial resources and financial management are vital and inevitable functions of any business or concern. Finance is the blood that flows through the veins of business and keeps it alive and functioning. Acquiring financial resources is one of the most crucial question which business needs to answer through proper knowledge and insight. Funds can be raised through numerous

sources like through loans or through debt financing or may be through equity either to the private or to public and so on. IPO is also one of the source of finance extensively used by corporates across the globe to raise huge finance from the markets through issue of its common stocks (equity) to the general public for subscription. IPOs can be raised by a newly setup concern or an already existing one which seeks to convert from private ownership to public ownership. IPOs are raised for the very first time in the primary market this market facilitates movement of idle savings of individuals to the corporates or to public utilities. The pricing of IPOs has always been a puzzle in both the short run as well as in the long run and thus has become a leading example of universal market inefficiency (Ibbotson et al. [1994)). Underpricing phenomenon is widely associated with IPO pricing and its long run performance, it refers to high positive initial returns from stocks in comparison to the market, this phenomenon lasted for a very short time only and in the longer run it led to underperformance. The current study has been undertaken to test empirically the same phenomenon and critically understand the underpricing phenomenon in Indian capital markets. The empirical discoveries from study has presented that there exist a significant level of underpricing with respect to IPO issues from Indian capital markets, on an average 17.90 % of initial underpricing is seen amongst IPO stocks from 2007 to 2017, i.e. for a period of 10 years. The returns in comparison to the market indices i.e. both NSE Nifty & BSE Sensex the returns were 19.19 % and 18.42 % respectively. The annualized raw returns on the listing day were 280.02 % and the annualized MAERs were 283.94 % and 286.60 % respectively. The post listing performance and cross sectional patters have been studies across different time frames of one month, two months, three months, six months, nine months (for short term) and one year, two years and up to three years from the day of listing/trading. The study is evident of underpricing amongst IPO stocks for up to 9 months and 1 years respectively, however the returns declines drastically thereafter, similar kind of trend is seen amongst MAERs and the Wealth relative index computed based on IPOs performance. The study also considers several factors and their cross relative impact on the short and long run performance and draws numerous insights to help investors in choosing the right type of issue and developing the right time frame for the investment holding.

VI. ACKNOWLEDGEMENT

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