

SOUTH INDIA
JOURNAL OF SOCIAL SCIENCES
 (BI ANNUAL)

December 2022

VOL. XX NO.4

CONTENTS**Page Nos.**

SEMI STRONG FORM EFFICIENCY OF ITC LIMITED – RESIDUAL ANALYSIS	1
CREDIT RISK MANAGEMENT AND PERFORMANCE OF SELECTED PUBLIC SECTOR AND PRIVATE SECTOR BANKS IN INDIA	6
WEAK FORM EFFICIENCY OF GODREJ CONSUMER PRODUCTS LIMITED - A STUDY ON EFFICIENT MARKET HYPOTHESIS	13
ROLE OF INDEPENDENT AUDIT COMMITTEE ON FIRM PERFORMANCE OF INDIAN LISTED COMPANIES	18
SHAREHOLDER'S WEALTH CREATION IN THE INDIAN STOCK MARKET DURING INTERNATIONAL CONFLICTS	23
PROBLEMS & PROSPECTS OF MSME ENTREPRENEURS IN THIRUVANANTHAPURAM DISTRICT	28
GROWTH AND INSTABILITY IN RICE EXPORTS FROM INDIA	34
WHAT EXPLAINS IPO UNDERPRICING IN INDIA?	39
CAPTURING THE DAY-OF-THE-WEEK EFFECT IN SECTORAL INDICES OF NATIONAL STOCK EXCHANGE	47
SIGNALING THE SHARE PRICE MOVEMENT-PREDICTION USING MACD OSCILLATOR	54
BUSINESS'S FORTUNE: A PREDICTION MODEL BASED ON MULTILAYER ANALYSIS	59
CAPITAL STRUCTURE AND FIRM VALUE: A STUDY WITH REFERENCE TO AUTOMOBILE COMPANIES IN INDIA	63
ANALYTICAL STUDY OF CSR PRACTICES IN THE DEVELOPMENT SECTORS WITH REFERENCE TO KARNATAKA STATE	68
WORK ENVIRONMENT OF WOMEN BANK EMPLOYEES IN KERALA	73
EXPLORING USER EXPERIENCE ON QUALITY OF FINTECH BANKING SERVICES	77
CONSUMER BEHAVIOUR ON ORGANIZED APPAREL RETAIL OUTLETS IN THIRUVANANTHAPURAM DISTRICT	82

WHAT EXPLAINS IPO UNDERPRICING IN INDIA?

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Abstract

This research article examines the initial return of 120 IPOs listed on the National Stock Exchange during the five-year period from April 2015 to March 2020 and the factors explaining initial return. Compared to the previous studies which concentrates only on the returns on the listing day, this paper considers the return on 5th day of trading also, in order to test the consistency of initial return. The results of the study clearly indicate the under-pricing of IPOs and the existence of 'Winners Curse' in the Indian stock market. It also found that the average initial return is substantially increasing on the 5th day of listing. The study found significant association between subscription rates and level of under-pricing on the listing day as well as on the fifth day, in line with the previous empirical findings.

Keywords: under-pricing, initial return, market adjusted average return, subscription rates

Introduction

Underpricing literally mean selling or offering something lower than its original value. In the capital market underpricing implies the positive closing of a scrip on the listing day (compared to issue price) in a stock exchange. Among the common anomalies discussed in IPO literature, underpricing is the prominent one. Under-pricing is evident in all markets, both developed and emerging. Most of the studies concentrated on U S market and all reported considerable amount of underpricing with different magnitude for different time periods. Underpricing from the point of view of issuers, is an opportunity cost. Researchers argue underpricing as an indirect compensation to underwriters (Loughran & Ritter, 2002). They also argue that issuers are not worrying about the money left on the table because of the sudden increase in their personal wealth (prospect theory). Another reason could be the superior knowledge advantage of the investment banker over the issue firm that cause to underprice the issue (Baron, 1982). There are well established empirical findings for underpricing in various capital markets around the world. In India, initial underpricing had been documented by various researchers. [See (Dhamija & Arora, 2017; Krishnamurti & Kumar, 2002; Madhusoodanan & Thiripalraju, 1997; Ranganathan & Saraogi, 2021; Shah, 1995)]. Unfortunately, there are few studies that concentrates on under-pricing with comprehensive set of variables and the survival of initial return up to 5 days of listing except studies conducted by (Puri, 2012; A. K. Singh & Kalra, 2019) in India who found initial returns on listing day and on subsequent critical days. In this study we examine the initial under-pricing and the 5th day return on Indian capital market and measure the relationship of average initial returns with some important determinants such as subscription rates, firm's age and issue size.

Degree of under-pricing and its causes in the U. S Market

The reasons explaining underpricing include asymmetric information models of (Baron, 1982) and (Rock, 1986) where the former explains disproportionateness of information between the issuing firm and investment bankers and the latter explains this asymmetry between informed and uninformed investors. (Michaely & Shaw, 1994) reports the relation between underwriters' reputation and the degree of underpricing and supports asymmetric information hypothesis of Rock. Jay R Ritter (Ritter, 1991) documents the short run and long run performance of IPOs with specific hypothesis and reported that long run under performance and initial underpricing are inversely related. (Jain & Kini, 1994) examined the difference in working efficiency of firms when they become public from private. Their study found no substantial evidence to establish relationship between degree of underpricing and post issue performance rather reported decrease in the Market to Book ratio, Price Earnings Ratio and EPS after the IPO.

Studies from emerging markets and from India

The short run underpricing is a common phenomenon in emerging market as well. (Hermin & Murhadi, 2015) found significant relationship between underpricing and auditor's reputation, underwriter's reputation and return on equity among the IPOs listed on Stock Exchange during 2004-14 with 204 samples in Indonesia. In the study of French IPO market, Aissia and Hellara (Aissia & Hellara, 2019) examined the leverage and idiosyncratic volatility of IPO firms and report that industry and macro-economic variables are the important predictors of IPO underpricing. Rakibul Islam studied the existence of underpricing theories in Bangladesh stock market in explaining the reasons for underpricing and the predictive power of variables (R. Islam, 2014). (Adjasi et al., 2011) finds a significant underpricing of Nigerian market at 43.1%. In Pakistan, (Mumtaz et al., 2016) found robustness of variables used for explaining underpricing. They found only 6 significant variables out of 15 and the study supports the investors sentiment theory but no significant relationship to explain ex ante uncertainty. In a recent study, (Ahmad-Zaluki & Badru, 2020) found significant relationship between underpricing and the intended use of IPO proceeds in the prospectus in Bursa Malaysia. In India, studies which report wide spread underpricing in India include (Bansal & Khanna, 2012; Hawaldar et al., 2018; Pande & Vaidyanathan, 2007; Sahoo & Rajib, 2010; Seth et al., 2019) and they tried to establish the relationship of different explanatory variables with the underpricing. (Sabarinathan, 2010) examined the Indian IPO market during 1993 to 2009 and found significant changes in IPO firms include the offer size, firm size (in terms of post issue paid up capital), the method of pricing, firm's age, type of Industry and intended stock exchanges for listing. Anchor investor's role in underpricing has documented by (Kumar & Sahoo, 2021). This study tries to fill this gap by concentrating on the following objectives.

- To measure the initial returns of Indian IPOs on the day of listing and on the 5th day of listing on NSE.
- To examine the factors explaining initial performance of IPOs, specifically, Issue size, Age of the firm, and the Overall subscription rate.

Materials and methods

The study focuses on examining the initial return of IPOs listed on National Stock Exchange during the five-year period from April 2015 to March 2020 and the factors explaining initial return. The closing share prices of companies are elicited from the official website of National Stock Exchange (NSE) (<https://www1.nseindia.com>) which are also supplemented with information available on the website <https://www.chittorgarh.com>. For collecting data of firm's age and issue details like issue size and oversubscription rate, we referred the prospectus and also use the information supplemented

by NSE and Chittorgarh. The data were compiled and arranged using M S Excel in proper form. For data analysis, we use EViews 9.0 software.

Table1. Year wise details of number of companies listed on NSE during 2015-2020

Year	Total Number of mainstream IPOs Listed on NSE	Included in Sample	Excluded	Sample (%)
2015-16	24	20	4	16.67
2016-17	28	26	2	21.67
2017-18	45	41	4	34.16
2018-19	20	18	2	15.00
2019-20	15	15	0	12.50
Total	131	120	11	100

Source: www1.nseindia.com and compiled by the authors.

Variables and Hypothesis Development -Dependent variable- Underpricing (MAAR)

In line with previous literatures (A. Ljungqvist, 2007, Krishnamurti & Kumar, 2002) Market Adjusted Average Return (MAAR) on listing day is taken as a measure of under-pricing.

The process of computing the value of dependent variable (MAAR) is:

First, the return on security i is calculated:

$$RR_i = (P_1 - P_0) / P_0$$

Where,

RR_i = Absolute return of i^{th} share (Bruson, 2019)

P_1 = Closing share price on the listing day

P_0 = Offer price of the security

Secondly, Market return (M_i) (Nifty 50 as benchmark) for the corresponding date of the IPO issue for each security is computed (closing value of Nifty on the listing day and Nifty on Offer closing day).

$$M_i = (M_1 - M_0) / M_0$$

$$MAAR = \{(1 + RR_i / (1 + M_i)) - 1\} * 100$$

Where, MAAR = Market Adjusted Average Return.

Dependent variable- Market Adjusted Average Return on 5th day of listing (MAAR₅)

The above same procedure is followed for computing 5th Day RR (RR_5) and Fifth Day Market Adjusted Average Return. ($MAAR_5$)

Independent Variables

The Average return ($MAAR$) is regressed across 3 Independent Variables, the firm's age, issue size and subscription rate. To make standardisation and to avoid heteroskedasticity, the values of all independent variables were converted into their natural log.

Firm's Age

In many previous literatures (Vetsuypens & Muscarella, 1989), (Clark, 2002), (Boehmer & Ljungqvist, 2004), (Bansal & Khanna, 2012); the 'firm's age' is taken as the time gap (in years) between the year of founding of the company and the year of IPO issue. Older the company, assuming good popularity and track record, lesser is the chance for information asymmetry, leading to

less chance for under-pricing. Hence, there is an inverse relation between these two variables. Hence the null hypothesis can be stated as:

Hypothesis 1: *There is no significant relationship between Firm's Age and the level of underpricing*
Issue size

The log values of *Issue size* are used as an independent variable. Studies show that large sized issues have lower underpricing as the number of bidders (prospective investors) will be high (Beatty & Ritter, 1986), (Megginson & Weiss, 1991), (Bansal & Khanna, 2012) (Chhabra et al., 2017; Dhamija & Arora, 2017). Therefore, an inverse relationship is expected between *degree of under-pricing* and *issue size*.

Hypothesis 2: *There is no significant relationship between issue size and the level of under-pricing*
Oversubscription rate

Oversubscription rate represented in the model by the log (*the number of times the issue is subscribed in terms of offer size*), is used as another IV to explain the level of underpricing. Oversubscription indicate the investor's demand to new securities (Dhamija & Arora, 2017). So, a direct relationship is anticipated between oversubscription and level of under-pricing.

Hypothesis 3: *There is no significant relationship between overall subscription rate and the degree of under-pricing.*

Hence, the regression model is:

$$MAAR = \alpha + \beta_1 \ln \text{issuesize} + \beta_2 \ln \text{subsc} + \beta_3 \ln \text{age} + \epsilon_i \dots \dots \dots (1)$$

Where,

MAAR = Market Adjusted Average Return

ln issuesize = Log of size of issue

ln subsc = Log of overall subscription rate (Number of times)

ln age = Log of firm's age

ϵ_i = Error term.

Similar to above, hypothesis for establishing relationship between $MAAR_5$ with the three independent variables are:

Hypothesis 4: *There is no significant relationship between Firms Age and the Market Adjusted Average Return on day 5 ($MAAR_5$)*

Hypothesis 5: *There is no significant relationship between Issue size and the Market Adjusted Average Return on day 5 ($MAAR_5$)*

Hypothesis 6: *There is no significant relationship between overall subscription rate and the Market Adjusted Average Return on day 5 ($MAAR_5$)*

Hence the regression equation is:

$$MAAR_5 = \alpha + \beta_1 \ln \text{issuesize} + \beta_2 \ln \text{subsc} + \beta_3 \ln \text{age} + \epsilon_i \dots \dots \dots (2)$$

Where:

$MAAR_5$ = Market Adjusted Average Return on 5th day of Listing.

(All

Independent variables as explained above)

Empirical results and discussion

Descriptive statistics

The difference between Raw Return (RR 15.94 %) and the Market Adjusted Average Return (MAAR) (16.07%) is only negligible at 0.13%. Other research studies also point towards similar findings Loughran & Ritter, 2002 and Beatty & Ritter, 1986 (Beatty & Ritter, 1986). This is also in line with the findings of Hawaldar et al (Hawaldar et al., 2018) who reported the difference as attributable to stringent measures imposed by SEBI with respect to listing delay. Similarly, the Raw Return is 21.07% and MAAR is 21.26% on 5th day of listing. These findings underpin the under-pricing in Indian IPOs during 2015 to 2020. However, the level of initial under-pricing during this period is

much lesser compared to the findings of (Shah, 1995) which reported an initial under-pricing of 105.6% during 1991 to 1995.

Initial return on Listing Day and on the 5th Day

The year wise comparison of data revealed that underpricing was lowest in the year 2018-19 and the highest initial return was during the year 2016-17. The poor initial performance of IPOs during 2018-19 was mainly attributable to the increased volatility in the Indian capital market along with other markets in the world. (SEBI Annual report 2018-19, pp.no.65

Figure 1 Market Adjusted Average Return on the listing day

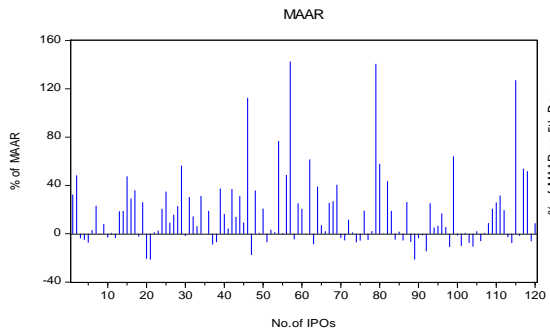


Figure 2 MarketAdjusted Average Return on theFifth day of listing

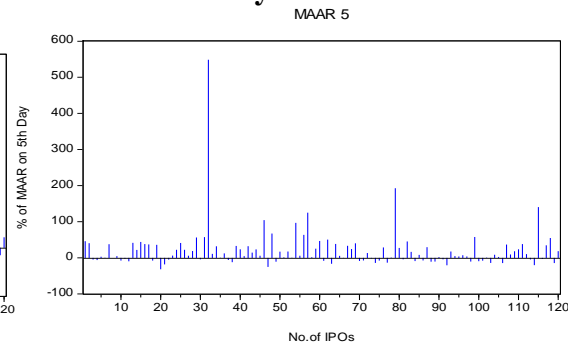


Figure shows the variability of returns of various IPOs during the study period. Among the IPOs 67.5% (81 IPOs) are under-priced (return >0) and 39 (32.5%) are overpriced (return<0). The average under-pricing for the period is 16.07% and 21.26% respectively.

Test of Year wise Initial returns

In order to test the statistical significance of year wise initial returns and the whole period returns (significantly different from zero or otherwise), t test is being used.

All the ‘t’ values are significant except in the year 2018-19 means that the MAAR and MAAR₅ in all the years are significantly different from zero. This finding is consistent with all of the previous studies which shows significant average underpricing in Indian Capital market.(Bansal & Khanna, 2012; A. K. Singh & Kalra, 2019)

Multiple Regression Results- MAAR

The Raw Return (RR) and Market adjusted Average Return (MAAR) on the listing day and 5th day was regressed with all the three independent variables. Since the difference between RR and MAAR is negligible, in line with previous literatures, this study reports only MAAR on the listing day and MAAR on 5th day of listing.

Since the data are cross sectional, the residuals are tested for homoscedasticity and multi collinearity. The result using Breusch-Pagan-Godfrey Test shows heteroskedasticity among residuals and the presence of collinearity (Uncentered VIF >10) in the case of *Firm Age* and *Issue size*. Therefore, Whites Heteroscedasticity Consistent standard errors for Estimation, which is BLUE (Best Linear Unbiased Estimate) is used. The result of regression is presented in Table3

Table 2 Multiple Regression Results- MAAR

White heteroskedasticity-consistent standard errors & covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.221880	16.09707	0.324399	0.7462
LNISSUESIZE	-1.120868	2.123964	-0.527725	0.5987
LNSUBSC	12.01806	1.399211	8.589168	0.000*
LNAGE	-3.222722	2.039387	-1.580241	0.1168
R-squared	0.528180	Mean dependent var		16.06956

Adjusted R-squared	0.515977	S.D. dependent var	29.40867
Prob(F-statistic)	0.000000	Wald F-statistic	28.21190
Prob(Wald F-statistic)	0.000000		

Out of the 3 IVs, only the *subscription rate* is significant (0.000). Therefore, the H_3 : *There is no significant relationship between overall subscription rate and the degree of under-pricing*, is not accepted at 5 % level of significance. This result is in line with the findings of (Rock, 1986; P. Singh & Kumar, 2008). It can be inferred that there is a strong positive relationship between the overall *Subscription rate* and the level of initial under-pricing.

Table 3 Subscription Rates and Initial Returns for separated data

Category	No. of sample	Percentage	Average Mean subscription in no. of times (Median)	MAAR-Listing Day %	MAAR-5 th Day %
Under-priced	81	67.5	51.17 (32.05)	27.13	35.76
Over-priced	39	32.5	4.22 (1.9)	-6.91	-8.85
Total	120	100			

Source: Secondary data compiled by authors. *Median values are shown in parenthesis.

For better understanding, the data was bifurcated into two sets; one set representing the under-priced issues and the other, the overpriced (Table 4). Out of the total sample of 120 IPOs, 81 IPOs (67.5 %) are under-priced and the average subscription rate of under-priced IPOs is 51.17 times of offer size whereas, that of over-priced IPOs (32.5%) is 4.22 times of offer size. Whereas, the initial return in under-priced section on listing day and 5th day of listing is 27.13% and 35.76% respectively and for overpriced section, the respective negative returns were -6.91% and -8.85%. Similar inferences were found in several international research studies(Rock, 1986; Vong &Trigueiros, 2009). Accordingly, there are two categories of investors, informed and uninformed. Informed investors will be crowded across the when the issues are good and they do not invest in bad issues since they have better information about the future growth prospects of the company. Whereas, the uninformed investors fail to recognise good issues and bad issues (Rock, 1986). The informed will get majority of good issues and the uninformed will get smaller portions in good issues and larger portion in bad issues and they will lose in terms of first day return, popularly referred to as “winners curse”. Thus, higher subscription is found in case of underpriced issues than those of overpriced issues. These results underlined the findings of Hong Kong IPOs (Vong &Trigueiros, 2009).

Relationship of Firm Age and Issue size with the level of under-pricing

The study analysed the relationship of *Firm Age and Issue size* with the level of under-pricing. Table 3 shows that firm’s age is inversely related with the degree of under-pricing (t value -3.222722), even though not significant. This expectation of a inverse relationship between age and degree of underpricing is consistent with (Vetsuypens & Muscarella, 1989) ,(P. Singh & Kumar, 2008)and (Bansal & Khanna, 2012, 2013) but contradict to the findings of (Islam et al., 2010) they found a significant positive relationship between *Firm’s age* and the level of under-pricing in Bangladesh market. Even though the sign is negative, there is no evidence of significant relationship between level of under-pricing and *issue size*, which is also contrary to the findings of (Islam et al., 2010).

The model has overall significance at 5% (F, 0.0000) and the adjusted R^2 is 0.516 indicates that 51.6 % of the variability in level of underpricing in Indian IPO market is explained by issue size, firm age and subscription rate. This finding supports the theory of *ex ante uncertainty* as we could not predict the IPO returns with 100% accuracy. The uncentered VIF for Age and Issue size (Uncentered VIF is 17.24 and 33.03 respectively) is comparatively smaller. Besides, White heteroskedasticity-consistent standard errors and covariance for estimation makes the model valid.

Consistency of Under-pricing on the Fifth Day (MAAR₅)

It is found that the MAAR₅ (21.26 %) is higher than that of the MAAR on the listing day (16.06%). A multiple regression was run to identify the factors explaining the MAAR on 5th day.

Table 4 Multiple Regression Results-MAAR5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	45.52696	34.44890	1.321579	0.1889
LNISSUESIZE	-3.147644	4.245138	-0.741470	0.4599
LNSUBSC	13.76931	2.795305	4.925869	**0.0000
LNAGE	-12.16847	6.719193	-1.811001	*0.0727
R-squared	0.198445	Mean dependent var		21.26017
Adjusted R-squared	0.177715	S.D. dependent var		58.62788
F-statistic	9.572874	Durbin-Watson stat		2.045561
Prob(F-statistic)	0.000011			

The analysis show that *Subscription rate* is the most significant factor explaining initial return on the 5th day of listing (Table 5). The null hypothesis 6 rejected at p value 0.0000 which is highly significant at 5% level. This result sheds some light on the continuous demand of the shares from the investors who are ready to buy shares even on the 5th day of listing as indicated at the time of floating through high oversubscription rate. The **Firm's Age** is negatively related with level of under-pricing and is significant at 10%. Our results failed to accept null hypothesis 4 at 10% and are consistent with many previous studies which have reported inverse relationship between initial returns and firm's age (P. Singh & Kumar, 2008). Similar to the regression results of MAAR on listing day and in line with previous literatures, there is a negative relationship between level of underpricing and the *issue size* [see (Madhusoodanan & Thiripalraju, 1997)]. Even though the sign is negative, the null hypothesis 5 is accepted and concluded that there is no significant relationship between level of under-pricing and *Issue size*.

The residuals are checked for heteroscedasticity and the null hypothesis is accepted and concluded that residuals are Homoscedastic. The model has overall significance at 5 % (Since F test-P value is 0.00) and the adjusted R^2 is 0.178 indicates that 17.8 % of the variability in MAAR5 is explained by the independent variables.

Conclusion

The empirical evidence of IPO underpricing is an international phenomenon. The present study focused on examining the initial return of IPOs listed on National Stock Exchange during the five-year period from April 2015 to March 2020 and the factors explaining initial return. Apart from the previous studies which concentrates only on the returns on the listing day, here, the return on 5th day of trading is also taken into consideration in order to test the consistency of initial return just after listing. The initial under-pricing is 16.07 % and MAAR on 5th Day is 21.26 %. The observed level of underpricing in this study is lesser than the findings of most of previous studies which were done in pre- book building era and this could be attributable to the stringent measures by SEBI to reduce

information asymmetry. The under-priced issues were oversubscribed substantially when compared with the average overpriced IPOs. The results of the study clearly indicate the underpricing of IPOs and the existence of 'Winners Curse' in the Indian Capital market. It is found that the average initial return is substantially increasing on the 5th day of listing, therefore, the investors will be benefitted if they wait to exit from their investment on the 5th day of listing rather than on the listing day. Above all, the association of subscription rates and level of under-pricing is highly significant, on the listing day as well as on the fifth day, in line with the previous empirical findings. Further research on Indian capital market needs to be made by including more industry related and emerging market factors to shed more light on the capital market anomalies.

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