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Effect of Underwriter's Reputation on Performance of Small Business IPOs

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ABSTRACT

The purpose of the study is to determine the impact of the underwriter's reputation on shaping the short- and long-term IPO success of small businesses. The paper uses IPO data from 2012 to 2020, three reputable proxy and event-time **methodologies** to analyze the company's performance through market-adjusted excess returns, cumulative abnormal returns and buy & hold returns. Similarly, to mitigate common predispositions, use the calendar-time methodology, Fama-French three-factor model and Carhart four-factor model with high and low reputational groups. The study revealed a significant positive impact of underwriters' reputations on first-day returns and long-term performance. Overall, the results indicate that, in the long-term, IPOs of Indian small and medium-sized enterprises are over efficient with regard to reputation signals. On the contrary, the calendar-time method and multifactor model indicate the low long-term IPO effectiveness of the SME. According to the authors' **conclusion**, this is the first study to assess the impact of underwriter reputation on business performance using several reputation indicators, the calendar time methodology, and the multi-factor model on the ICP's Indian IPO platform.

Keywords: SMEs; underwriter reputation; calendar time portfolio; underpricing; emerging market

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INTRODUCTION

Small business ventures are the backbone of any nation, as they contribute directly to the economy by providing employment, production and trade that further improve the people's standard of living and provide resources to the governments to run smoothly. Small business ventures continuously look for high-stake capital infusions to achieve their growth targets and expand their businesses. Therefore, the consistent fund requirement for small business ventures results in the establishment of alternative stock exchanges worldwide. On the contrary, these small ventures also suffer an identity crisis in the capital market. They face a lack of investor attention due to information asymmetry and high market uncertainty. Thus, underwriters contribute significantly by handling IPOs, signaling IPO quality, mitigating information asymmetry, and promoting IPOs to assure better performance.

In emerging economies, the capital market for small-medium enterprises (SMEs) suffers heavily due to a lack of investor attention, larger lot sizes, high volatility, ex-ante uncertainty and relaxed disclosure for SME IPOs. It further causes information asymmetry for investors and issuers. Small businesses thus leverage the underwriter's reputation to communicate the quality of the IPO to stakeholders. While literature on underwriter reputation has received wide academic attention, much less is known in contrast with the performance of SME IPOs in emerging markets. In international literature, researchers used event studies to capture IPO performance. However, using event time methodology (ETM) brings along new listing bias, resampling bias, skewness bias and potential issue of cross-sectional dependency of the returns during performance assessment. Hence, previous studies used the calendar-time portfolio approach to mitigate these biases and have robust results [1, 2].

In India A. Bhattacharya [3] examined the IPO performance of 106 SME IPOs from 2012 to 2015 and found that well-timed IPOs and underwriter reputation affect long-term success. However, study employed BSE small caps to determine the

UDP of the sample IPOs. N. Arora and B. Singh [4] covered this gap by using BSE SME IPOs as benchmark proxy and found long-term IPO overperformance using cumulative abnormal returns (CAR) and buy & hold abnormal returns (BHAR). They recommended utilising the calendar-time portfolio methodology to calculate long-term performance in future research. Thus, the study contributes to the literature by using calendar-time portfolio and multifactor models to examine the long-term performance of SME IPOs. Similarly, we calculated MAER, CAR, and BHAR from 2012 to 2020. We are using MAER and one-year BHAR to measure short-and long-run performance. Additionally, we are using multiple reputational proxies, such as registered capital (RPP1), market share based on IPO managed (RPP2) and market share based on capital raised (RPP3) to test the impact on long-run performance.

THE INSTITUTIONAL ENVIRONMENT OF THE INDIAN SME IPO PLATFORM

The Indian platforms provided a capital infusion to small businesses from the primary market. Multiple listing conditions and differences of these platforms are presented in *Table 1*.

DATA COLLECTION AND RESEARCH FRAMEWORK

Model Description

The study sample involves 383 IPOs listed on the BSE SME and NSE Emerge platforms from 2012 to 2020. The data has been collected based on variables used in hypothesis formation. The data was collected from the Indian SME exchange, Ace Equity, and prospectuses.

Table 2 provides an overview of IPOs from 2012 to 2020 for their initial return (IR) and market-adjusted excess return (MAER). The IR is computed as the percentage difference between the initial day offer and the close price. Similarly, the MAER is calculated by the difference between the offer price and the closing price of the first day in percentage and then adjusted with the market return of the benchmark of the same day. The market benchmark for BSE and NSE started from 2013 and 2017, respectively.

Measuring IPOs performance

Event Time Method

The study uses ETM for evaluating the IPO's performance and computes post-issuance 1 to 36 months BHARs with the exclusion of IR. Following J.R. Ritter [5], month includes 21 consecutive trading days, with month-1 encompassing trading days 2–22, month-2 encompassing trading days 23–43, and so on. Therefore, the event year consists of 252 trading days and $BHAR_{i,t}$ for IPO i is described as:

$$BHAR_{i,t} = \left[\prod_{t=1}^{T}\left(1+R_{i,t}\right)-1\right]-\left[\prod_{t=1}^{T}\left(1+R_{m,t}\right)-1\right]. \quad (1)$$

In equation (1), $R_{i,t}$ indicates daily returns of the stock i and $R_{m,t}$ denotes the market return of the benchmark for time t, respectively. Similarly, the average $\left(\overline{BHAR_t}\right)$ of the portfolio is as follows:

$$\overline{BHAR_t} = \frac{1}{N_t}\sum_{i=1}^{N_t} BHAR_{i,t}. \quad (2)$$

The long-run returns can have a high potential for suffering from skewness bias. Therefore, to control this bias, J.D. Lyon et al. [6] suggested using bootstrapped skewness-adjusted test statistics, which can be computed as follows:

$$t\left(\overline{BHAR_t}\right) = \sqrt{N_t}\left(S+\frac{1}{3}\hat{\gamma}S^2+\frac{1}{6N_t}\hat{\gamma}\right), \quad (3)$$

$$\text{where } S = \frac{BHAR_{i,t}}{\sigma\left(BHAR\right)} \quad (4)$$

$$\text{and } \hat{\gamma} = \frac{\sum_{i=1}^{N_t}\left(BHAR_{i,t}-\overline{BHAR_t}\right)^3}{N_t\sigma\left(BHAR_t\right)^3}, \quad (5)$$

where $\hat{\gamma}$ denotes the coefficient of skewness, N_t is the number of IPOs and $\sigma(BHAR)$ denotes the cross-section variation of yields in the sample [4].

THE CALENDAR TIME METHODOLOGY

We calculated the average abnormal monthly return for a diversified portfolio and further employed the E.F. Fama and K.R. French [7] three-factor and M.M. Carhart [8] four-factor models for evaluating the long-term returns and their time-series significance.

Table 1

Regulatory Framework of Indian SME IPO Platform

Particulars	BSE SME	NSE Emerge	Main Board
Face Value (aftermarket paid-up capital)	Less than INR 250 million.	Less than INR 250 mil	More than INR 100 mil.
Underwriting	Should be underwritten 100%, with a minimum of 15% of IPO on the books of underwriters	Should be underwritten 100%, with a minimum of 15% of IPO on the books of underwriters	Mandatory (an exception to a condition where QIBs have been offered more than 50% of IPO)
IPO Gradation	Not required	Not required	Required
Size of issue	No restriction	No restriction	No restriction
Market making	Required	Required	Not required
DRHP scrutiny	Exchange	Exchange	Security Exchange Board of India
Reporting	6 monthly	6 monthly	Quarterly
Track record	3 years	3 years	Avg. operating profit of INR 150 mil. (pre-tax) each for any 3 years out of 5 years

Source: Indian SME Exchange.

Table 2

IPOs Distribution by Listing Year and Market-Adjusted Returns

Year	S&P BSE SME IPO			NSE SME Emerge			Full market		
	N	IR, %	MAER, %	N	IR, %	MAER, %	N	IR, %	MAER, %
2012	1	2.8	0.00*	0	0.00*	0.00*	1	2.80	0.00*
2013	19	21.63	23.68	3	–0.12	8.91*	22	10.76	23.68
2014	17	11.45	13.09	2	–10.17	5.47*	19	0.64	13.09
2015	36	5.5	4.87	2	2.17	3.26*	38	3.84	4.87
2016	40	5.95	5.15	8	6.61	4.13*	48	6.28	5.15
2017	43	4.18	4.71	37	8.23	9.29	80	6.21	7.00
2018	62	3.63	3.47	92	7.33	7.5	154	5.48	5.49
2019	53	4.23	3.39	53	5.12	4.43	106	4.68	3.91
2020	19	16.53	16.3	6	2.39	2.34	25	9.46	9.32
Full sample	290	8.43	9.33	203	2.70	5.67	493**	5.57	9.06

Source: Compiled by the author.

Note: * Indicates absence of SME benchmark index. Thus, for 15 firms the index return of BSE SME IPO is undertaken; ** Out of 493 IPOs, 110 issuing firms had either shifted to the mainboard or delisted.

$$R_{p,t} - R_{f,t} = \alpha_i + \beta_i \left(R_{m,t} - R_{f,t}\right) + s_i SMB_t + h_i HML_t + \varepsilon_{i,t} \quad (6)$$

In equation (6), $R_{p,t}$ denotes monthly portfolio gains and $R_{f,t}$ indicates a risk-free rate for the month *t*, respectively. Similarly, $R_{m,t}$ is the market return of index and $\left(R_{m,t} - R_{f,t}\right)$ signifies the market risk premium. Therefore, the multifactor model includes: $s_i SMB_t$, which is the return difference of large and small-size portfolios, $h_i HML_t$ denotes the difference in monthly portfolio returns concerning high and low B/M (book to market) portfolios.

$$R_{p,t} - R_{f,t} = \alpha_i + \beta_i \left(R_{m,t} - R_{f,t}\right) + \\ + s_i SMB_t + h_i HML_t + m_i MOM_t + \varepsilon_{i,t}. \quad (7)$$

In equation (7), $m_i MOM_t$ denotes the momentum factor, where momentum signifies difference in portfolio returns of winner and loser stocks. Similarly, α_i is the intercept to captures long-run performance. Thus, after controlling for $\left(R_{m,t} - R_{f,t}\right)$, $s_i SMB_t$, $h_i HML_t$ and $m_i MOM_t$, if α_i is different from zero, it indicates abnormal returns. Similarly, a positive and negative α_i can be interpreted as overperformance and underperformance in long-run.

Measuring Underwriter Reputation

The study uses three underwriter proxies to capture the different aspects of an underwriter's reputation. Following R. Michaely and W.H. Shaw [9], the study presumes that the scale of an investment bank can be associated with its reputation. Therefore, we use registered capital of the underwriters as RPP1. All 56 underwriters that managed at least one IPO were ranked into eight groups based on their registered capital. The underwriter with the highest registered capital is given a rank of 1, while the underwriter with the least registered capital is given a rank of 8. The RPP2 is based on the assumptions of C. Su and K. Bangassa [2]. They presume that underwriters who handle more IPOs are well-known in the market and have a better reputation. Thus, we assign one point for each IPO undertaken, and if multiple underwriters are involved, one point is distributed in equal proportion. Further, ranks are assigned from 1 to 8 based on issue counts, where rank 8 is given to underwriters with higher issue counts and rank 1 is given to underwriters with lesser IPO counts. Following W. L. Megginson and K. A. Weiss [10], we believe that higher capital raised by underwriters will result in a better market reputation. Thus, in RPP3, we use the ratio of each underwriter's gross proceeds to total gross proceeds.

Model Framework

We established MAER and 12-month BHAR as the dependent variables, whereas RPP1, RPP2, and RPP3 are used as independent variables with 8 control variables.

Issue size ($SIZE_i$). We computed the issue size based on the market offering of the IPOs. Prior literature shows a higher degree of ex-ante uncertainty for small-size IPOs compared to big-size issues due to the higher opacity of information [5, 11]. Therefore, we expect a positive association between an issue's size and the IPO's performance in the long term.

Initial returns (IR): Initial returns are unadjusted first-day raw returns of the IPOs. Prior literature stated the need to separate the first-day benchmark adjusted excess return and long-term performance from the initial returns, according to S. Song *et al.* [13]. S. Dhamija and R.K. Arora [14] find a positive association between IR and UDP and vice versa. Thus, we are assuming a positive association between IR and IPO performance in the long-run.

Firm Size ($SIZE_f$): Small firms publish little operating history, have low sales, high volatility, and low reputational underwriters, which creates higher information asymmetry and speculation and causes long-run underperformance [3, 5, 15]. So, we presume a positive association between firm size and IPO performance.

Total Subscription (T_SUB): The total subscription is computed as the subscription rate of the IPO by the investors. According to fad theory, over-optimism may also cause investor overreaction and speculation that can lead to lower long-run performance [4, 16]. Thus, the study assumes a negative relationship among

total subscriptions and IPO performance in the long term.

Earnings per share (EPS): F. Allen and G.R. Faulhaber [17], through signaling theory, state that good quality companies differentiate themselves from bad quality firms through underpricing the IPO. Hence, the study includes EPS to measure firm quality, operating performance and expects a positive relationship with long-run performance.

Debt ratio (DA): The debt ratio indicates the issuing company's leverage and the firm's overall financial risk [12]. Therefore, a higher ratio causes a higher risk, resulting in long-run underperformance and vice versa. We expect a negative association between debt ratio and IPO performance.

EBITDA to asset ratio ($EBITDA_A$): The EBITDA to asset ratio is the profitability measure of the firm. This ratio includes the overall income of the firm in place of operating income, thus providing a clearer picture of the earnings [12]. The higher $EBITDA_A$ ratio indicates a firm's better profitability position, thus resulting in better long-run performance. Therefore, we assume a positive relationship between the $EBITDA_A$ ratio to long-run performance.

Market Condition (MKTCD): Following N. Arora and B. Singh [4] and P. Jaskiewicz et al. [18], we explained the hot market by creating a dummy variable. The managers take advantage of favourable market conditions and try to time their IPOs accordingly, creating investor overvaluation that further leads to higher first-day returns but lower returns in the long term. Therefore, we expect a negative association between the hot market and IPO performance.

Table 3 presents descriptive statistics and a correlation matrix for selected variables. Similarly, analysing the cross-sectional association of MAERs and one-year BHARs with the selected variables is described in the following equation:

$$MAER = \alpha + \beta_1 [all\ reputational\ proxies] + \beta_2 SIZE_i + \\ + \beta_3 IR + \beta_4 SIZE_f + \beta_5 TSUB + \beta_6 DA + \beta_7 EBITDA_A + \\ + \beta_8 EPS + \beta_9 MKT + \varepsilon, \quad (8)$$

$$BHAR_{12m} = \alpha + \beta_1 [all\ reputational\ proxies] + \beta_2 SIZE_i + \\ + \beta_3 IR + \beta_4 SIZE_f + \beta_5 TSUB + \beta_6 DA + \beta_7 EBITDA_A + \\ + \beta_8 EPS + \beta_9 MKT + \varepsilon. \quad (9)$$

Hypothesis 1:

H_1: The reputation of underwriters has a positive impact on MAERs of the Indian SME IPOs.

Hypothesis 2:

H_1: The reputation of underwriters has a positive impact on one-year BHARs of the Indian SME IPOs.

DATA INTERPRETATION AND DISCUSSIONS

Analyzing Long-Run Performance Using Event Time Methodology

The ETM uses CARs and BHARs to evaluate the IPO's performance in the long term. *Table 4* presents the values of CAR and BHAR for event time t in columns 3 and 5, respectively, from 1 to 36 months. Although a negative value indicates IPO underperformance, a slight improvement can be seen from the 1st month to the 24th month. Similarly, MAERs shows –0.25% return for first month, which further increases by 61.37%, to 209% from 3 to 36 months.

In *Table* 5, we classify MAERs and 12m BHARs with respect to RPP1, RPP2, RPP3 and divide them into groups of high and low reputations. Panel A exhibits that low-reputation underwriters had a more significant rate of UDP than reputed underwriters. The result can be explained by a lack of quality signals among less reputed underwriters and concern for lower subscription levels [19]. Additionally, the average one-year BHARs are comparatively higher for less reputed underwriters. A similar trend is exhibited in panel B, where high and low reputational measure is based on issues managed by underwriters. Hence, underwriters managing more than 4% of the IPOs are categorized as having a high reputation and lower reputation otherwise. In panel C, underwriters with more than 7% of total proceeds indicate a strong reputation. The MAERs for RPP3 is 6%, identical to the mean of whole sample, and the same is reflected in case of one-year BHARs.

Table 3

Correlation Matrix and Descriptive Statistics

	RPP1	RPP2	RPP3	$SIZE_i$	IR	$SIZE_f$	T_SUB	DA	$EBITDA_A$	EPS	MKTCD
Panel A: Descriptive statistics											
N	383	383	383	383	383	383	383	383	383	383	383
Mean	4.5	3.32	7.43	12.18	−0.072	42.73	9.76	0.25	0.07	43.03	0.67
Min.	1	0	0.04	1.17	−28.5	0.6	0.07	0	−4.23	−530.56	0
Max.	8	7	19.8	92.74	30.28	696.13	263.09	2.97	4.42	7779.54	1
Std. Dev.	2.09	1.85	6.51	11.86	5.82	75.57	29.69	0.25	0.34	417.6	0.47
Panel B: Correlation matrix											
RPP1	1										
RPP2	0.151***	1									
RPP3	0.220***	.218***	1								
$SIZE_i$	−0.008	.142***	0.094	1							
IR	−0.004	−0.061	0.009	−0.007	1						
$SIZE_f$	−0.173***	0.054	0.010	.354***	0.010	1					
T_SUB	0.127**	−0.047	0.004	0.025	−0.093	−0.065	1				
DA	0.008	−0.032	.128**	0.010	−0.079	−0.041	0.023	1			
EBITDA_A	0.105**	−0.004	−0.038	0.061	0.048	0.071	−0.003	−.384***	1		
EPS	−0.020	0.023	.124**	−0.025	−0.016	−0.029	0.012	−0.070	0.015	1	
MKTCD	0.099	0.093	0.083	.216***	−0.036	−.102**	.193***	−0.025	.135***	0.040	1

Source: Compiled by the authors.
Note: *10% significant level, **5% significant level, ***1% significant level.

Table 4

The Post-Issue CARs and BHARs for the Event Months

Event time (t)	N_t	CAR_t	t (CAR_t)	$BHAR_t$	t ($BHAR_t$)
1 month	383	−0.0731	1.794	−0.0025	17.169***
3 months	383	−0.0571	2.526***	0.6137	8.691***
6 months	324	−0.0424	3.214***	0.9503	7.761***
9 months	281	−0.0358	1.734	1.2571	4.922***
12 months	240	−0.0342	3.091***	1.3787	5.203***
15 months	191	−0.0305	2.739***	1.6467	5.545***
24 months	107	−0.0295	4.297***	1.9002	1.611
36 months	29	−0.0436	3.005***	2.0951	5.002***

Source: Compiled by the authors.

Note: *10% significant level, **5% significant level, ***1% significant level.

Table 5

The Measure of Reputational Estimates to Market-Adjusted Excess Return and One-Year BHARs

Reputational Proxies	Benchmark adjusted returns							
	MAER				12-months BHARs			
	N	$\bar{X}$	Median	σ	N	$\bar{X}$	Median	σ
Panel A: Reputational estimate of RPP1								
High (RPP1 > 60 mil INR)	219	5.222	3.120	10.950	146	1.301	1.151	1.280
Low (RPP1 < 60 mil INR)	164	7.091	1.620	23.790	94	1.500	1.360	1.118
Panel B: a reputational estimate of RPP2								
High (RPP2 > 4%)	266	5.949	3.355	12.349	166	1.315	1.166	1.281
Low (RPP2 < 4%)	117	6.190	1.100	25.958	74	1.522	1.522	1.068
Panel C: a reputational estimate of RPP3								
High (RPP3 > 7%)	183	6.052	3.740	9.769	129	1.426	1.356	1.256
Low (RPP3 < 7%)	200	5.996	1.650	22.576	111	1.324	1.224	1.180
Full Sample	383	6.023	2.200	17.657	240	1.379	1.238	1.223

Source: Compiled by the authors.

Results of Cross-Sectional Regression

Table 6 exhibits the results of multivariate cross-sectional OLS regression based on equations 8 and 9. In panel A, the empirical results indicate that RPP1 and RPP3 statistically impact MAER. However, RPP2 is found to be inconsequential in row 2. The results are coherent when we are regressing the same reputational proxy for the entire dataset in row 4. The results are consistent with those of N. Arora and B. Singh [20] and J. Gao et al. [21]. The argument behind the positive relationship can be the behaviour of reputed underwriters to manage the IPOs of low-risk firms to avoid negative listing and lack

Table 6

The Outcome of Cross-Sectional OLS Regression

	Intercept	RPP1	RPP2	RPP3	$SIZE_i$	IR	$SIZE_f$	T_SUB	DA	$EBITDA_A$	EPS	MKT	Adj. R^2
Panel A: MAERs used as a dependent variable for Indian SME IPOs													
(1)	0.945	0.148			−0.165	0.654	0.217	0.464	0.169	−0.050	0.178	0.037	0.614
		(1.98)**			(2.67)***	(15.05)***	(3.15)***	(10.49)***	(2.56)***	(0.73)	(4.23)***	(0.750)	
(2)	2.010		0.072		−0.159	0.652	0.203	0.473	0.168	−0.041	0.176	0.032	0.609
			(0.94)		(2.55)***	(14.92)***	(2.92)***	(10.74)***	(2.53)***	(0.61)	(4.14)***	(0.65)	
(3)	0.973			0.176	−0.159	0.636	0.187	0.487	0.146	−0.053	0.151	0.512	0.629
				(3.26)***	(2.63)***	(14.83)***	(2.79)***	(11.29)***	(2.25)***	(0.81)	(3.58)***	(0.61)	
(4)	2.937	0.358	0.160	0.240	−0.080	0.735	0.02	0.106	3.340	−1.005	0.147	0.452	0.641
		(2.61)***	(0.97)	(4.11)***	(2.92)***	(14.96)***	(3.21)***	(11.09)***	(2.21)***	(1.02)	(3.55)***	(0.68)	
Panel B: 12 months Buy & Hold Abnormal Return used as a dependent variable for the sample of Indian SME IPOs													
(5)	2.442	0.186			−0.291	0.182	−0.005	−0.223	0.372	0.238	0.043	−0.154	0.332
		(2.94)***			(3.28)***	(2.98)***	(−0.05)	(3.62)***	(4.22)***	(2.48)***	(0.745)	(1.96)***	
(6)	2.955		0.246		−0.314	0.141	0.058	−0.261	0.358	0.239	0.066	−0.162	0.352
			(3.78)***		(3.59)***	(2.34)***	(0.654)	(4.31)***	(4.12)***	(2.54)***	(1.14)	(2.09)***	
(7)	2.128			0.092	−0.308	0.173	0.045	−0.235	0.377	0.217	0.043	−0.134	0.306
				(1.24)	(3.40)***	(2.78)***	(0.49)	(3.75)***	(4.19)***	(2.22)***	(0.71)	(1.16)	
(8)	3.475	0.08	0.29	0.14	−0.31	0.149	0.01	−0.241	0.33	0.247	0.15	−0.16	0.389
		(2.27)***	(4.33)***	(1.81)	(3.63)***	(2.53)***	−0.14	(4.08)***	(3.96)***	(2.70)***	(3.55)***	(−2.07)***	

Source: Compiled by the authors.

Note: *10% significant level, **5% significant level, ***1% significant level.

of subscription by the investors. Furthermore, the higher investor demand can be reflected in the elevated closing price as well as higher UDP levels [22]. Similarly, the reputed underwriters used UDP to avoid insolvency risk and signal IPO quality [23].

Panel B of *Table* 7 exhibits the regression results of reputational proxies on one-year BHARs, where the individual regression outcome of reputational measures is shown in rows (5), (6), (7), the whole sample is shown in row (8). The result shows a significant positive impact of RPP1 and RPP2 on one-year BHARs. Similarly, RPP3 shows a positive but insignificant impact on long-run performance. The results align with the studies of H. Anderson et al. [24], N. Arora and B. Singh [25], S. Dhamija and R.K. Arora [26] and C. Su and K. Bangassa [2]. It indicates that the underwriters use their expertise to undertake quality IPOs and avoid riskier issues.

The positive IPO performance can also be attributed to reduced information heterogeneity among investors due to efficient IPO estimation and signalling the accurate market value of the firm by the underwriters [25]. Conclusively, the regression results accept hypothesis 1 (H_1) that the underwriter's reputation positively impacts the MAERs of the Indian SME IPOs. Furthermore, the results also accept hypothesis 2 (H_1) that the underwriter's reputation positively impacts the one-year BHARs of the Indian SME IPOs.

Table 7

Regression Results Using the Calendar-Time Approach

	Full Sample	RPP1		RPP2		RPP3	
		High	Low	High	Low	High	Low
Panel A: Results of the Fama–French three–factor Model							
Intercept	–0.115	–0.114	–0.116	–0.113	–0.118	–0.088	–0.115
t–stat	(54.74)***	(43.01)***	(34.06)***	(44.06)***	(33.11)***	(35.50)***	(36.83)***
Rm–Rf	0.135	0.140	0.129	10.268	0.158	0.130	7.837
t–stat	(13.05)***	(10.32)***	(8.05)***	(0.13)	(8.31)***	(9.95)***	(0.14)
SMB	0.138	0.136	0.142	11.797	0.126	0.069	11.202
t–stat	(13.57)***	(10.17)***	(8.99)***	(0.31)	(6.72)***	(5.35)***	(0.11)
HML	–0.030	–0.019	–0.045	–2.171	–0.046	0.051	–3.055
t–stat	(3.17)***	(1.54)	(3.04)***	(0.03)	(2.58)***	(4.15)***	(0.02)
Adj.R^2	0.050	0.052	0.047	0.049	0.052	0.037	0.052
Panel B: Results of Carhart four–factor Model							
Intercept	–0.114	–0.113	–0.115	–0.112	–0.117	–0.087	–0.113
t–stat	(53.95)***	(42.27)***	(33.67)***	(43.40)***	(32.66)***	(35.27)***	(36.24)***
Rm–Rf	0.154	0.163	0.143	0.146	0.176	0.155	0.133
t–stat	(14.21)***	(11.45)***	(8.53)***	(11.29)***	(8.84)***	(11.22)***	(8.59)***
SMB	0.160	0.162	0.157	0.165	0.146	0.091	0.184
t–stat	(14.76)***	(11.39)***	(9.42)***	(12.80)***	(7.35)***	(6.75)***	(11.80)***
HML	0.005	0.023	–0.019	0.012	–0.011	0.093	–0.009
t–stat	(0.48)	(1.57)	(1.05)	(0.86)	(0.53)	(6.48)***	(0.55)
MOM	0.078	0.093	0.058	0.079	0.074	0.092	0.071
t–stat	(5.81)***	(5.27)***	(2.81)***	(4.97)***	(3.01)***	(5.56)***	(3.71)***
Adj.R^2	0.053	0.056	0.048	0.052	0.055	0.041	0.054

Source: Compiled by the authors.

Note: *10% significant level, **5% significant level, ***1% significant level.

Estimating the IPO Performance in the Long-Term Using Calendar-Time Methodology

We are using the calendar-time portfolio to overcome the biases that emerge from event-time returns. Therefore, a diverse portfolio is being created for every calendar month from 2012 to 2020. However, companies that issued IPOs in the last 36 months are included in the final portfolio. And tested with FF3 and CF4 models. Concerning to calendar-time portfolio, our null hypothesis assumes that the mean monthly abnormal returns are equal to zero. Therefore, a subsequent multifactor regression intercept is employed to test our null hypothesis. Panels A and B of *Table* 7 show the calendar time regression results using the FF3 model and CF4 model, respectively.

Consequently, RPP1, RPP2, RPP3 are categorized into high and low reputational groups. The result shows an abnormally significant long-term IPO performance. Although the positive abnormal returns using ETM imply overperformance, the negative intercept from *Table* 7 indicates the long-run underperformance of the firms. A similar trend of significant negative intercept can be observed in underwriters' reputational measures that are further categorized into high and low reputational groups. The results indicates that the intercept significantly differs from zero in panels A and B.

The result shows the significant abnormal performance of the IPOs in the long-run. However, the exhibited long-run overperformance based on ETM is converted into underperformance while using the multifactor model. The negative intercept indicate that Indian SME IPOs are performing similarly to international evidence [2, 27, 28].

The model suggests a strong impact of the underwriter's reputation on the long-run performance of the firms. However, the small

Table 8

Endogeneity Testing Using Two-Stage Least Square Regression

Dependent	Intercept	Instrument	$\widehat{RPP1}$	$SIZE_i$	IR	$SIZE_f$	T_SUB	DA	$EBITDA_A$	EPS	MKT	R^2
First–stage regression:												
RPP1	11.177	1.746		–0.165	0.019	–0.008	0.014	0.112	0.313	0.011	0.644	0.507
		(4.81)***		(1.09)	(0.47)	(2.57)***	(2.09)***	(0.13)	–0.73	0.33	1.03	
Second–stage regression:												
MAER	14.459		–0.351	–0.914	–0.318	0.002	0.104	–1.857	5.761	0.002	–2.92	0.151
			(0.56)	(3.28)***	(2.98)***	0.15	(3.44)***	(0.48)	(1.96)**	0.69	(1.41)	
$BHAR_{12m}$			0.073	0.073	0.067	0.058	0.061	0.474	0.175	0.066	–0.381	0.605
			(2.97)***	1.24	0.41	0.31	(2.81)***	1.49	(2.54)**	0.32	(2.90)***	

Source: Compiled by the authors.

Note: * with parenthesis denotes white heteroscedastic-consistent t-stat, * 10% significant level, ** 5% significant level, *** 1% significant level.

adjusted R^2 indicates the minimal data variance explained by the model. Therefore, the fluctuations in performance using multifactor models and ETM support the arguments of P.A. Gompers and J. Lerner [29] and J.R. Ritter and I. Welch [30] that these deviations can be observed due to the sample selection criteria, time selection and methodology adopted to evaluate the IPO performance in the long run. We can infer that if investors are using ETM to assess returns, they will expect abnormal returns in long-term. However, in the case of a calendar-time portfolio, investors cannot expect similar abnormal returns in the long term.

Robustness Test

Multiple studies have suggested that the reputation of an underwriter can be an endogenous variable and therefore needs to be checked against the problem of endogeneity [2, 25, 31, 32]. Thus, we are using a two-stage least squares regression (2SLS) to check the robustness of our cross-sectional OLS regression and validate the results. Hence, we are constructing a new instrument variable based on the geographic difference between the issuer firm and the underwriting firm. We presume that due to the lower information cost, the underwriters with the shortest distance to the issuing firm have a higher probability of getting the opportunity to handle an IPO.

We used the address information of all the underwriters and issuing firms to create the instrument variable and confirmed the distance using Google Maps of India. In the case of an IPO underwritten by two or more underwriters, we use the distance of the leading underwriter to the issuing firm. At the first stage of the 2SLS model, we regress the instrument variable with the RPP1 using the same control variable that we used in the *Table 6* using the following equation:

$$RPP1 = \alpha + \beta_1 [INSTRUMENT] + \beta_2 SIZE_i + \\ + \beta_3 IR + \beta_4 SIZE_f + \beta_5 TSUB + \beta_6 DA + \\ + \beta_7 EBITDA_A + \beta_8 EPS + \beta_9 MKT + \varepsilon. \quad (10)$$

In the second stage of the 2SLS model, we generated the variable $\widehat{RPP1}$ from the regression coefficient of the first stage. Furthermore, we are using the predicted value of $\widehat{RPP1}$ instead of the value of reputational proxies used in sections (1) and (5) in *Table 6*.

$$MAER/BHAR = \\ \alpha + \beta_1 \widehat{RPP1} + \beta_2 SIZE_i + \beta_3 IR + \beta_4 SIZE_f + \\ + \beta_5 TSUB + \beta_6 DA + \beta_7 EBITDA_A + \\ + \beta_8 EPS + \beta_9 MKT + \varepsilon. \quad (11)$$

Table 8 presents the two-stage least square regression to check for endogeneity issues

and avoid issues with biased estimators in our regression results. The first stage regression of our instrument variable shows a significantly positive impact on UDP. The higher value of Wald f-statistics from its critical values shows the strength of instrument variable to explain the endogenous variable. Similarly, the explanatory power of these variables can be reflected through the McFadden R^2 of 50.70. The result supports positive impact of underwriter reputation on the IPO performance in long-run. This also suggests that Indian underwriters benefit the issuing firms and investors by providing better long-run performance.

CONCLUSION

Most studies on Indian SME IPO platforms majorly used ETM with a single reputational measure (market share) to draw conclusions [4, 25, 33, 34]. Since the reputation of an underwriter can be based upon various indicators, we have taken three different reputational proxies to test the impact of the underwriter's reputation on the first day and long-run performance of the firms. The results suggest that due to the lack of investor attention and higher cost of investor entry, the reputed underwriters play a substantial role in signalling IPO quality and shaping better long-run performance.

Furthermore, the calendar time regression exhibits a statistically significant negative intercept that indicates a long-run underperformance of SME IPOs. However, the lower coefficient value of intercept and adjusted R^2 of the multifactor model shows an inadequate power to explain the impact of underwriter reputation on long-run performance. These conflicting results are aligned with the previous studies of P.A. Gompers and J. Lerner [29], J.R. Ritter and I. Welch [30] and C. Su and K. Bangassa [2] that the evaluation of long-term IPO performance immensely hinges on the selection criteria, sample period selection and methodology adopted by the investors. Similarly, in the absence of a standardized long-run performance measure, the previous literature also directs inconsistent results and differs based on firms and regulatory environments. Thus, we conclude that the argument that an underwriter's reputation has a significant positive impact on MAER's long-run performance holds true. Since there is no single accepted method to measure long-run performance, future studies may explore this considerable gap to come up with unique long-run measures to evaluate the firm's performance.

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