Underwriter's Discretion and Pricing of Initial Public Offerings

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Abstract

Agency theory explains that information asymmetry between the issuer and underwriter results in underpricing of initial public offerings (IPO). The underwriters take advantage of this information asymmetry and reduce the risk of unsold shares by lowering the price. This creates a conflict with issuers' objective of maximizing the issue proceeds. However, literature supports that it does not hold true in case of well reputed underwriters since they are at lower risk of issue failure. Evidence reported in the literature associated with underwriter's reputation helps in reducing agency problem. In this study we argue that in absence of discretionary power of underwriter, the certification effect may not play significant role in determining the degree of underpricing. Indian IPO market requires validation of certification hypothesis in the absence of discretionary power of pricing and share allocation. The empirical results show that even in the absence of discretionary power of pricing and allocation, underwriter reputation plays significant role in influencing the pricing of IPO. Well reputed underwriters are successful in reducing the degree of IPO underpricing. The underwriter's role is found significant in determining liquidity on the listing day. Therefore, even though the underwriters are devoid of discretionary power, the certification effect is found significant in determining the IPO underpricing.

Keywords: Agency theory, IPO underpricing, Certification

1. Introduction

A firm decides to go public to raise the capital for future growth, expansion and promoters' wealth diversification (1). The issuer of initial public offering (IPO) has primary requirement to obtain capital through the sale of new equity securities. Because of this reason, issuer would like to ensure the success of the issue to the fullest subscription by attracting the prospective investors. Price discovery process

becomes complex when there is greater mismatch between demand and supply of number of shares issued through IPO. Similarly significant difference in the price perception of the issuer and the investor results in mispricing the issue. This demand uncertainty leads to the risk of issue failure. To eliminate or reduce the difficulty in assessing the demand and price perception of investors, issuer appoints an underwriter in the process of IPO issuance. Underwriters help in the process of price determination because they can estimate the demand and price perception of the prospective investors based on the preliminary information obtained through the road shows. Given the above, issuer pass on the risk associated with the issue failure to the underwriter through firm commitment contracts. Therefore, the involvement of underwriter generates the possibility of agency related problem in the process of IPO issuance. Agency theory related explanation supports that underwriters try to reduce the risk of holding unsold shares by lowering the price of IPO, creating conflict with the issuer's objective of maximizing the issue proceeds (2). Agency theory based explanation of IPO underpricing points out the conflicting role of underwriter.

The agency conflict is exacerbated with greater discretionary power extended to the underwriter. In most of the developed markets, the underwriters have discretionary power of setting the final price of IPO and allocation of IPO shares. To reduce the risk of unsold shares, the underwriters try to set the price on the lower side than its fair price. As underwriters' holds the allocation power of the issue, they carry the biasness to allocate the underpriced shares to the informed (institutional) investors (3,4,5). As a result, discretionary power of allocation results into the degree of underpricing.

The review of extant literature shows that participation of underwriter in the process of IPO influences in three different ways. First, it leads to agency problem resulting in degree of IPO underpricing (2). Second influence is related to the certification effect associated with the underwriter reputation. Reputation of underwriter is also linked with the degree of underpricing and long term performance. Well reputed underwriters are able to reduce the degree of underpricing and fetch higher return in the long run (6,7). The third influence is observed in price stabilization activity once the secondary trading commences (8). These studies reveal potential benefits of having experienced and reputed underwriters although their involvement results in agency related problem. Therefore, degree of underpricing observed is residual of the combined effect of agency problem and certification effect.

This study argues that the net effect of agency theory and certification hypothesis can be controlled by country specific regulatory environment. Limited discretionary powers can potentially curb the opportunistic behavior of the underwriter. As a result, institutional set up and regulatory norms being exogenous in nature creates unique environmental set up which can have its bearing on the degree of underpricing. The review of extant literature shows exiguous attention in explaining the degree of underpricing with the help of underwriters discretionary powers in a given regulatory framework. Our purpose of this study is to validate the certification effect associated with underwriter reputation in Indian set up where the regulatory environment differs significantly. The certification effect associated with the underwriter reputation may not be significant in determining the degree of underpricing with very limited discretionary power extended to the underwriters by the regulatory agency. This study

contributes to existing literature by linking the regulatory environment and the discretionary power of underwriter with their reputation and its impact on IPO underpricing.

The remaining paper is organized as follows. Section 2 reviews existing literature, section 3 explains the role of underwriter in the context of Indian IPO and Indian regulatory environment, section 4 describes the data and methodology. Section 5 discusses the results followed by conclusions in section 6.

2. Related Literature

Information asymmetry is identified as one of the important determinant of IPO underpricing (1,2,9). Baron (2) supports agency theory based explanation of underpricing. The agency cost originates due to information asymmetry existing between the issuer and the underwriter. According to this theory, the issuer is always at a disadvantage compared to the superior information possessed by the underwriter. As a result, underwriters induce the degree of underpricing to reduce their distribution effort. In such situation, the issuer has to incur monitoring cost to satisfy the objective of maximizing issue proceeds.

Information asymmetry is observed at two interfaces, one between the issuer and underwriter and second is between underwriter and investors. Therefore, pricing of new equity issue is a challenge for the issuer. Underwriters' objective is limited to ensure the success of the issue. As a result, underwriters set the IPO price on lower side to reduce the risk of unsold inventory. Underwriters act as an intermediary between the firm and the investor, it controls the interaction between demand and supply of the issue (10).

Loughran and Ritter (11) found that underwriters leave money on the table (in the form of underpricing) that is equivalent to the profit of three years. They also point out that there is a greater probability of having conflict of interest between the issuer and the underwriter. Issuers are interested in increasing the IPO proceeds and underwriters are more often interested in making the issue successful.

The reputation of underwriter is associated with the certification effect. Well reputed underwriters are able to price the issue accurately. Reputed underwriters use their clientele to make the issue successful (7,12,13). Dunbar (13) reported that fairness of the IPO pricing influence the market share of the underwriter. Therefore, well reputed underwriters make serious attempt to obtain fair price of IPO. Hence, the agency related problems associated with well reputed underwriters are expected at minimal and help in reducing the degree of IPO underpricing. Highly reputed underwriters attract long term investors and help in improving the long term performance (14). If the underwriters' reputation is low, then the short term investors are attracted who participate in the flipping activities to obtain quick gains, hence the volatility of aftermarket returns increases.

In most of the markets, the underwriters set the final price of the issue and allocation of the shares. In the process they tend to misuse the discretionary power of pricing and allocation. The underwriters underprice the issue and allocate it to the investors

about whom they are confident and mitigate the risk of flipping to avoid the penalty (15).

Given the above, it is evident that the agency related problem and influence of certification effect is observed due to pricing and allocation related discretionary power of the underwriter. If the institutional set up limits the role and discretionary power of the underwriter, the certification effect associated with the underwriter reputation is likely to show insignificant impact on the degree of IPO underpricing. Therefore, country specific IPO norms and regulatory framework plays important role in controlling the impact of underwriter reputation in the process of IPO issuance.

3. Role of Underwriter in Indian Context

Indian IPO environment provides extremely suitable institutional set up to test the certification hypothesis and agency related problem associated with the underwriter in the absence of discretionary power of pricing and allocation. Indian IPO market exhibits unique regulatory environment governed by Indian capital market regulator- *Securities and Exchange Board of India (SEBI)*. In Indian market IPOs are issued either by following fixed pricing mechanism or book building mechanism. In fixed pricing mechanism, the final price is decided by the issuer a priori whereas in book building, the price range is finalized. The final price through book building is determined by considering the demand at different prices within the price band. The justification of price and price band is disclosed through regulatory filings. In book building mechanism, price discovery takes place based on bids and quantity received by the investors. Final price is determined through book building that follows the method of Dutch auction. Therefore, the underwriters do not have discretion to lower the price to reduce the risk of unsold inventory. The process ensures the final price that fetches full subscription. The process of allocation for each IPO also involves regulatory guideline. The minimum allocation to different investors' category is fixed. The retail investors receive 35%, non-institutional investors get 15% and qualified institutional buyers get 50% of the total issue. The demand within each category is matched with the available shares to be allocated. In case of undersubscription within any particular category, the unsubscribed portion is adjusted with the other category as per the regulatory guidelines. In addition, SEBI introduced IPO grading mechanism as an option to rate the quality of IPO in 2006. It was made mandatory for the period of May 2007 to 2013, however, SEBI did not find it quite effective in terms of communicating the quality of IPO to the retail investors. Therefore, mandatory requirement of grading is discontinued and it is been made optional again. However the study by Deb and Marisetty (23) found grading quite successful in lowering the degree of underpricing and communicating the quality of IPO to retail investors. The overall subscription has to be 90% minimum to have a successful issue. Given the above, risk associated with unsold inventory is very minimal which can be covered through the issue expense by the underwriter. Therefore, in this situation, the certification effect may not hold true in Indian IPO market.

Given the above regulatory regime, few IPO studies explore that Indian IPO mechanism is quite transparent due to which retail investors can decide the investment

decision based on the participation of institutional investors (24). Due to the transparent book building mechanism, participation of retail investors is totally driven by market sentiments (25). Existence of grey market premium drives the demand and underpricing (26). With the evidence of these studies, it is quite obvious that the role of underwriter is very limited in the process of Indian IPO and does not have many discretionary powers which help in curbing the opportunistic behaviour of underwriter.

Linking the above mentioned exogenous institutional framework in Indian context and the review of extant literature as mentioned in section 2, poses very logical research question, "Does the underwriter reputation matters when they do not have discretionary power of pricing and allocation in Indian context?"

This study is aimed at testing and validating the certification effect associated with underwriter's reputation in determining the degree of IPO underpricing in Indian context. It is also extended to analyze the influence of number of lead manager and issue expense with the underwriter ranking and listing day return.

4. Data and Research Methodology

The data consists of most of the successful IPOs issued between Jan. 2004 and Dec. 2010 excluding global depository receipts (GDRs). The total sample consists of 372 IPOs. The data is obtained from multiple sources. The data for firm specific variables is obtained from Prowess database provided by Centre for Monitoring Indian Economy (CMIE). The data for oversubscription is obtained from Capitaline database. The data regarding the names of lead managers, percentage of IPO underwritten and details of issue expense is obtained from the IPO final prospectus (regulatory filings) from the website of SEBI. Using multiple data sources will not affect our results.

Table 1 presents year-wise IPO issues considered for the study.

Table 1: Year wise Frequency of IPO

Year	2004	2005	2006	2007	2008	2009	2010	Total
No. of issues	22	49	76	103	41	17	64	372

The sample contains 372 IPOs issued between 2004 and 2010. Table 1 shows year-wise frequency distribution of IPO issued between the study period. Year 2006, 2007 and 2010 has witnessed relatively more number of IPOs in Indian market. The IPOs follow either fixed pricing or book building mechanism of issuance. Year 2009 and 2010 did not experience any fixed priced IPOs.

Variable Description:
Dependent variables: Open/Close Underpricing – computed as percentage change in the IPO opening price on listing day with respect to offer price as defined below in equation (1).

$$Underpricing = \frac{Opening\ OR\ Closing\ Price\ on\ ListingDay - Offer\ Price}{Offer\ Price} \times 100 .... \quad (1)$$

To observe any anomalies (if exist) in the result by considering the opening price and closing price on the listing day, we considered both to compute the degree of underpricing. Both price measures are considered in the literature to compute the degree of underpricing (17, 18).

Issue expense: Total issue expense including fees of underwriter and marketing expense considered as a percentage of issue size

Independent variables: LnIssueSize- Natural Log of issue size
LnOversubscription- Natural Log of oversubscription ratio
UWRanking- Ranking of underwriter as developed in the study is a categorical variable having value of 1, 2, 3 and 4. It is ranked as 4 being the best or highly reputed underwriter and 1 being the least reputed.
LnAgeatListing – Natural log of age of the firm which is computed from the year of incorporation to year of IPO issuance
Issue Mechanism- Issue mechanism is a binary variable takes 0 if the IPO is issued through bookbuilding process or 1 if IPO is issued through fixed price
Group affiliation- Is a binary variable takes value 0 if the firm is affiliated to business group otherwise 1.
LnTotalAsset- Natural log of total assets of the firm
NumberOfLeadMgr- It is total number of lead managers to the issue
LnTradingVolume to Issue Size - Natural log of ratio of trading volume on the listing day to total issue size
Issue Mechanism*UWRanking- The variable to analyze the interaction effect between the issue mechanism and underwriter ranking
LnBorrowing- Natural log of total borrowing as listed in Prowess database in liability tab for the IPO year

Table 2 presents descriptive statistics of various IPO characteristics. The average opening underpricing is 22.63% and closing underpricing is 28.54%. The minimum underpricing shows negative value indicating that few issues are overpriced as well. The average issue size of selected sample is INR 4202.9 millions having average oversubscription of 21 times. The issue expense for fixed price offers is marginally higher (7.26%) as compared to book built issue (7.15%). However, this difference in the issue expense based on issue mechanism is statistically insignificant. Though, the overall issue expense is marginally higher for fixed price issues, the average fees charged by intermediaries and marketing expense (3.09% and 1.40% respectively) is lower than that of fees charged (3.39% and 1.56% respectively) for book building IPO. This shows that the role of underwriter in advertising the IPO is critical and eventually leads to increasing the participation of investors to make the price discovery process efficient and successful through the book building process.

Table 2: Descriptive Statistics of IPO Characteristics

Variables		Count	Minimum	Maximum	Mean	Standard Deviation
Issue Size (INR million)[1]		372	60.00	154750.9	4202.9	13436.7
Oversubscription (times)		372	9.1	1758.8	206.2	271.0
Open Underpricing (%)		372	-319.8	3223.3	226.3	339.8
Close Underpricing (%)		372	-671.9	3400.0	285.4	540.8
Issue expense for book building issues (as % of issue size)		313	00.1	176.0	71.5	21.5
Issue expense for Fixed pricing issues (as % of issue size)		59	10.4	128.5	72.6	19.9
Issue expense for Business Group (BG) IPOs (as % of issue size)		65	00.1	110.5	58.8	23.9
Issue expense for NBG IPOs (as % of issue size)		293	7.5	176.0	76.4	21.3
Issue expense for underwriter ranking (% of issue size)	High-4	150	0.1	176.0	62.3	26.8
	Good -3	87	11.0	114.1	77.8	18.1
	Average-2	79	41.1	112.0	76.8	17.0
	Poor-1	51	33.6	152.9	83.6	24.0

In addition to other issue specific variables, issue mechanism is considered as one of the categorical variable for the analysis. Indian IPOs are issued through either fixed pricing or book building method which has an influence on the pricing of the issue. Therefore, it is considered as one of the control variable. Similarly, Indian businesses are dominated by family owned businesses where business group affiliation plays significant role in capital structure and ownership related decisions. Therefore, business group affiliation is considered as another important firm specific characteristic which is considered as a categorical variable since it is found significant in determining the degree of IPO underpricing (27). The issue mechanism and group affiliation are considered as control variables in multivariate analysis.

It is observed that business group (BG) affiliated firms have much lower issue expense (5.88% of issue size) as compared to non-business group (NBG) affiliated firms (7.64% of issue size). In addition, marketing expenses are also lower for BG firms (1.43% compared to 1.60%). These parameters reveal that the network effect of business group affiliated firms help in reducing the issue cost due to certification effect and network effect since business group acts as an intermediary in emerging

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[1] US Dollar = 60 INR (Indian Rupees) approximately depending on the time period under consideration

market. As per the institutional void argument, it helps in reducing the transaction cost, supporting the evidence reported by Khanna and Palepu, (16).

The descriptive statistics of issue expense based on underwriter reputation shows that highly reputed underwriters charge overall fees of 6.23% of the issue size whereas good and average reputed underwriters charge 7.78% and 7.68% of issue size respectively. Poor ranked underwriter show the issue fees as 8.36% of the issue size. This makes it evident that on an average well reputed underwriter has lower fees as compared to low reputed underwriters. The underwriters are ranked based on the year-wise proportion of IPO underwritten with respect to total size of IPO issued in a given year (19). The proportion of IPO size underwritten for each IPO by each lead manager is obtained from final prospectus. The total IPO size underwritten by each underwriter for each year is identified and the proportion of IPO underwritten is computed with respect to total IPO size in a year. On the basis of percentage of IPO size underwritten year-wise ranking of underwriter is generated rating 4 for the underwriter having highest percentage of IPO underwritten. The overall ranking of underwriter for the entire sample is predicted and divided into four categorical ranks based on 25th percentile from 4 being the best to 1 being poor. This final categorical ranking is used as underwriter reputation for the analysis purpose. We found that there are 69 different underwriters involved over our sample period and gets repeated for multiple IPOs for different years. Our underwriter ranking may change for the same underwriter for different years however remains the same in a given year. With these we obtain the ranking for 192 underwriters over the sample period involved in underwriting 367 IPOs. Table 3 presents the frequency distribution of underwriter ranking with number of IPOs underwritten.

The underwriter ranking is developed based on only IPOs underwritten for the period considered for the study. There might be other activities performed by underwriters other than issuing IPO which may influence underwriter reputation as their overall business. This parameter is not considered while developing the underwriter ranking. We acknowledge this as one of the limitation of this study.

Table 3: Frequency of Categories of Underwriter Ranking

Total Sample of Underwriters			IPO Firms with Underwriter Ranking		
UW rank	Frequency	Percentage	UW rank	Frequency	Percentage
High-4	47	23.9	High -4	150	40.3
Good-3	49	24.9	Good- 3	87	23.4
Average-2	47	23.9	Average- 2	79	21.2
Poor-1	49	24.9	Poor- 1	51	13.7
Total	192	97.5	Total	367	98.7

Table 4 presents the selection of lead manager based on the issue mechanism and group affiliation. Out of the total sample, 80% of business group affiliated firms opt for the highest reputed lead managers for IPO whereas only 31% of non business group affiliated firms have selected highest reputed underwriter as a lead manager.

Since descriptive statistics shows the fees charged by lead managers to group affiliated firms is relatively less. It is more likely that business group affiliated firms will opt for the best lead managers. It is strategically beneficial for the underwriter to fetch the business by serving business group affiliated firms since it is likely to help them to get the business in the future when other member firms in a business group go public. Therefore, there is significant difference in the issue expense of business group affiliated firms (5.88%) as compared to non business group firms (7.64%).

The issue mechanism also plays an important role in choosing the underwriter. Since the success of book building issue is subject to promotional efforts made by the underwriter, reputation of underwriter is important determinant for book built IPOs. The descriptive statistics of our sample shows that 48% of book building issues select highly reputed underwriter. An average issue size managed by underwriter ranking is presented in the table 4. It shows that reputed underwriters always handle large issues as reported by Corwin and Schultz, (20). Therefore, size of the issue is an important determinant in selecting the underwriter for the issuer. Hence, the small issuers do not have much option but to choose low ranked underwriter.

Table 4: Frequency of Underwriter Ranking Based on Group Affiliation and Issue Mechanism

UWRank	Business Group IPO	Non Business Group IPO	Book Building IPO	Fixed Issues IPO	Mean Issue size (INR million)
High -4	52	88	149	1	8905.5
Good- 3	9	74	79	8	1756.4
Average- 2	3	76	57	22	666.1
Poor- 1	1	50	26	25	354.1
Total	65	290	314	56	

To examine difference between the underwriter reputation and issue expense, Tukey test is conducted and the results are presented in table 5. The test results show that issue expense differs significantly when other grade underwriters are compared with highly reputed underwriter. Based on the descriptive statistics, it is observed that reputed underwriters always handle large issues. Therefore, size of the issue is an important determinant in selecting an underwriter for the issuer. Hence, small issuers do not have much option but to opt for low ranked underwriter.

Table 5: Tukey Test of Issue Expense for Underwriter Ranking

	Issue Expenses as Percentage of Issue Size		
	Highly reputed	Good reputation	Average
Highly reputed			
Good reputation	0.000***		
Average	0.000***	0.992	
Poor	0.000***	0.500	0.365

*** *indicates significance at 1% level*

4.1 Validating the Certification Hypothesis

In this study we follow ordinary least square regression estimation method as a multivariate analysis to validate the certification hypothesis.

The following regression equation is used to test the influence of underwriter reputation in determining the degree of underpricing.

$$Open\ Or\ Close\ Underpricing = Constant + \beta_1 LnIssueSize + \beta_2 Lnoversubscription + \beta_3 UnderwriterRanking + \beta_4 LnAgeatListing + \beta_5 IssueMechanism + \beta_6 GroupAffiliation + error\ \text{(Results are presented in table 6)}$$

To test the impact of underwriter reputation on the liquidity on listing day, following cross section regression equation is used.

$$LnTradingVolumetoIssueSize = Constant + \beta_1 LnIssueSize + \beta_2 Lnoversubscription + \beta_3 NumberofLeadMgr + \beta_4 UnderwriterRanking + \beta_5 GroupAffiliation + \beta_6 LnAgeatListing + error\ \text{(Results are presented in table 7)}$$

To test impact of underwriter ranking on issue expense, following cross section regression equation is used.

$$Issue\ expense = Constant + \beta_1 IssueMechanism + \beta_2 UnderwriterRanking + \beta_3 LnIssueSize + \beta_4 LnBorrowing + \beta_5 GroupAffiliation + \beta_6 LnAgeatListing + \beta_7 LnTotalAsset + \beta_8 IssueMechanism * UWranking + \beta_9 No.ofLeadMgr + error$$
(Results in table 8)

5. Results and Discussion

To analyze the impact of underwriter ranking on degree of underpricing, the regression estimation results are observed and presented in table 6. The results of degree of underpricing by considering open underpricing is presented in models 1 to 3 and close underpricing are presented in Models 4 to 6. In columns, ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively for all regression results.

In these models issue size and oversubscription are considered as control variables. Underwriter's reputation is found significant in determining the degree of underpricing. Similarly, the significance of underwriter's reputation is observed for close underpricing. The beta coefficient indicates the negative relationship. Therefore, the result signifies that higher the reputation (ranked no. 4) lower will be the degree of underpricing. These results validate the certification phenomenon of underwriter reputation in Indian environment. In model 2 and 3, when we add issue mechanism and business group affiliation, the underwriter ranking is found significant at 10%. This indicates that group affiliation also has potential of exhibiting the certification effect which is not statistically significant by itself, however has a modifier effect. The certification effect through underwriter reputation continues for close underpricing as well. Hence, it can be interpreted that the reputed underwriters are

able to manage market making activities significantly which reflects in the IPO price (opening as well as closing) on the listing day. This evidence supports that well reputed underwriters are able to price the issue accurately due to which underpricing is reduced. Though, in case of Indian IPOs, underwriters do not have pricing and allocation power of IPO, reputation of underwriter still has significant impact in reducing the IPO underpricing. With these results, we further argue that if the certification effect associated with underwriter reputation is observed significant in determining the degree of underpricing in the Indian environment, it is likely to have influence on other parameters such as information creation, issue expense and aftermarket liquidity. Therefore, the study is extended in analyzing the role of underwriter reputation and number of lead managers to link with the issue expense and liquidity on listing day.

Table 6: Regression Estimation Results Showing Impact of Underwriter Ranking on Underpricing

	Dependent Variable-Open Underpricing						Dependent Variable -Close Underpricing					
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Independent Variables	β	p	β	p	β	p	β	p	β	p	β	p
(Constant)		0.529		0.194		0.416		0.822		0.487		0.853
LnIssueSize	-0.172	0.002***	-0.13	0.023**	-0.13	0.023**	-0.20	0.000***	-0.184	0.003***	-0.185	0.003***
LnOversubscription	0.659	0.000***	0.657	0.000***	0.657	0.000***	0.574	0.000***	0.573	0.000***	0.573	0.000***
UWRanking	-0.119	0.034**	-0.096	0.091*	-0.098	0.088*	-0.139	0.020**	-0.127	0.036**	-0.132	0.032**
LnAgeatListing	-0.048	0.233	-0.04	0.297	-0.04	0.314	0.009	0.829	0.013	0.771	0.015	0.727
Issue Mechanism			0.111	0.020**	0.110	0.021**			0.058	0.255	0.057	0.265
Group affiliation					-0.01	0.805					-0.022	0.610
N	368		368		368		368		368		368	
R²	0.418		0.42		0.427		0.341		0.343		0.344	
Adjusted R²	0.411		0.41		0.417		0.334		0.334		0.333	

***, **, and * indicate significance at the 1%, 5% and 10% level, respectively

Further, the study is conducted to identify the role of underwriter in determining the liquidity on listing day. In table 7 the regression estimation results are presented by considering the natural log of proportion of trading volume with respect to issue size. Regression results reveal that underwriter ranking is significant in determining the trading volume on the listing day (model 1). The trading volume and underwriter ranking show negative relationship imply that well reputed underwriters may not be involved in flipping activity which increases trading volume. On the other hand, low ranked underwriters increase the trading volume. This can be linked with the flipping activity associated with trading volume.

In model 2, we include the number of lead manager as an independent variable to determine its impact on liquidity on the listing day. The results exhibit inverse relationship between the number of lead managers and liquidity. The model also increases the goodness of fit from 0.168 to 0.289 significantly.

Table 7: Regression Estimation Results to Analyze Impact of Underwriter Reputation in Determining the Liquidity on Listing Day

	Dependent Variable- LnTradingVolume to Issue Size					
	Model 1		Model 2		Model 3	
Independent Variables	β	p	β	β	β	p
(Constant)		0.000***		0.000***		0.000***
Issue Mechanism	-0.094	0.084*	-0.058	0.241	-0.060	0.227
UWRanking	-0.440	0.000***	-0.295	0.000***	-0.303	0.000***
LnAgeatListing	0.037	0.448	0.041	0.392	0.045	0.349
Number of Lead Mgr			-0.358	0.000***	-0.361	0.000***
Group affiliation					-0.043	0.381
N	361		323		323	
R2	0.168		0.289		0.291	
Adjusted R^2	0.161		0.280		0.280	

***, **, and * indicate significance at the 1%, 5% and 10% level, respectively

To analyze the effect of firm specific attribute such as business group affiliation which may attract investors on the first day of trading, we include binary variable of group affiliation in model 3. The group affiliation is found insignificant. This reveals that the trading on listing day is purely influenced by underwriter reputation and number of lead managers. These results support similar findings by Li et al., (21) where role of underwriter in aftermarket activity influence the liquidity on the listing day. In Indian scenario, the underwriters do not have the power of allocation hence the demand created at initial oversubscription can be fulfilled in the secondary market on the listing day. Therefore, the reputation and number of lead manager being involved in the issue are significant.

To identify the determinants of issue expense and assess the effect of underwriter reputation on issue expense, the regression estimation method is adopted by considering the issue expense as dependent variable. The results are reported in table 8. The regression analysis considers dependent variable in the form of issue expense as a percentage of issue size (model 1 to 4). The results make it evident that the decision of underwriter's selection based on the underwriter reputation is significant in determining issue cost. It exhibits negative relationship implying that highly reputed underwriter charge lower fees as compared to other categories of underwriter.

In model 2 we add total asset as a proxy indicator for the size of the firm. It is found significant having negative beta coefficient. This shows that larger firms have less issue expenses.

We consider age of the firm as a control variable. In model 1 and 2 we also consider group affiliation as an independent variable which does not show significance in determining the issue expense. If the certification effect associated with business group affiliation is significant, in that case, it is likely to have significant impact on issue expense. However, it does not have significant impact on issue expense. On the other hand leverage is found significant in determining the issue expense having negative beta coefficient when issue expense is considered in the form of percentage of issue size. This shows that highly levered firm incurs less expense while going

public. This could be linked to having lower issue size or lower need of capital raised through IPO. In addition to above mentioned variables, the interaction effect of underwriter ranking and the issue mechanism of the IPO is highly significant in determining the issue expense. Therefore, it can be inferred that the underwriter reputation is significant based on whether the issue is offered through book building process or fixed price process. The marketing efforts are different for both the mechanism since there is fundamental difference in the price discovery process. Therefore, reputed underwriters assess the price accurately and try to make the issue successful without lowering the price.

Table 8: Regression Estimation in Identifying Determinants of Issue Expense

Independent Variables	Dependent Variable- Issue Expense as Percentage of Issue Size							
	Model 1		Model 2		Model 3		Model 4	
	β	p	β	p	β	p	β	p
(Constant)		0.000		0.000		0.000		0.000
Issue Mechanism	-0.163	0.006***	-0.197	0.000***	-0.256	0.000***	-0.099	0.062*
UWRanking	-0.250	0.000***	-0.147	0.022**			-0.110	0.073*
LnBorrowing	-0.326	0.000***						
Group affiliation	-0.028	0.599	0.024	0.635				
LnAgeatListing	-0.056	0.297	0.008	0.869	0.013	0.794	0.004	0.933
LnTotalAsset			-0.480	0.000***	-0.488	0.000***	-0.408	0.000***
Issue Mechanism* UWRanking					-0.173	0.029**		
Number of Lead Mgr							-0.136	0.025**
N	302		328		328		293	
R²	0.200		0.268		0.264		0.288	
Adjusted R²	0.186		0.256		0.254		0.276	

***, **, and * indicate significance at the 1%, 5% and 10% level, respectively

In addition to the reputation of underwriter, Model 4 of regression estimation exhibit that number of lead manager is significant in determining issue expense with negative effect. It indicates that increase in number of lead manager results in decrease in issue expense. It means that overall underwriters' spread is constant. In larger issues, underwriters would like to be a part of process which gives them opportunity to increase their future business (20). Therefore, they may not be critical about the fees charged.

The overall empirical results reveal that even in the absence of discretionary power of pricing and allocation of IPO share in Indian market, the underwriter reputation is observed significant. This is primarily because of their aftermarket role in controlling the liquidity on listing day. Well reputed underwriters show less trading volume as compared to others on the listing day. This corroborate the results of Carter and Dark (14) which reports that well reputed underwriters are able to attract long term investors and are successful in making the use of their clientele to make the issue successful rather than lowering the price.

6. Conclusions

Intermediation of underwriter in the process of IPO creates conflict of objective between the issuer and underwriter. The agency theory based explanation of degree of underpricing identifies that the underwriters lower the price to minimize the risk of unsold inventory. The certification hypothesis reveals inverse relationship between the underwriter reputation and degree of underpricing. The study is based on the premise that the certification effect associated with underwriter reputation plays significant role only when the underwriters have significant discretionary powers in the process of IPO. These powers are generally associated with pricing and allocation of shares as observed in most of the countries. This situation does not prevail in Indian IPO market since the underwriters do not have discretionary power of pricing and allocation both. Hence, this study argues that the certification effect associated with underwriter reputation may not be valid in Indian context. Our study reveals that though Indian regulator has curbed the discretionary power of underwriter, the certification effect still holds true in Indian IPO market. The reputation of underwriter still plays significant role in influencing the degree of underpricing. The study results also reveal significant role of underwriter reputation and number of lead managers in influencing liquidity on listing day. Well reputation of underwriter show negative relationship with liquidity implying that they are not involved in flipping activity. The study is extended in analyzing the relationship between underwriter reputation and issue expense. The result reveals that underwriter reputation has significant negative impact on issue expense. The empirical results support that average fees charged by highly reputed underwriters' as a percentage of issue size is lower than other three groups (good, average and poor) of underwriters' reputation. Highly reputed underwriters always underwrite larger issues. As a result, although the fee charged by them is relatively less (in terms of percentage of the issue expense), they get benefited due to larger absolute amount by underwriting large issue size. The IPOs that are smaller in size always have low reputed underwriter since small issuers may not be able to find highly reputed underwriter to underwrite the issue. The reputation of underwriter and number of lead managers tries to bridge the gap between demand and supply. As a result, low reputed lead managers' exhibit greater trading activity on the listing day which can be associated with flipping activity resulting in greater degree of underpricing. This provides the evidence that aftermarket activity by the underwriter is quite significant and influence the liquidity supporting the similar findings by Ellis et al. (22).

The study contributes to the literature by linking the agency theory and certification hypothesis based explanation associated with underwriter reputation in a regulatory framework which discourages the opportunistic behaviour of underwriter. The study reveals that the efforts to curb the agency conflict between the issuer and underwriter induced by the Indian regulatory framework are not completely successful in Indian IPO market.

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