Corporate Governance, Ownership Structure, and IPO Underpricing: Evidence from the Indian New Issue Market

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Abstract

This paper attempted to contribute to extant literature on IPO underpricing by examining the effect of corporate governance on IPO underpricing. Although, previous research in the field of corporate governance has already studied the role of effective corporate governance on several fronts, the role of corporate governance in abating information asymmetry and thereby signalling the value of firms to potential investors is an area that is yet to be explored (particularly in context of Indian new issue market). The results of the present study indicated that presence of independent directors on board was more informative than presence of non-executive directors ; also, merely meeting the regulatory requirement while determining the board composition did not send a quality signal. The results revealed that only those firms which go beyond the minimum regulatory requirements pertaining to corporate governance norms catch some attention of investors.

Keywords : **corporate governance, IPO underpricing, quality of board, informational asymmetry, signalling theory**

JEL Classification : G14, G15, G30, G32

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There is a large body of literature available on corporate governance that collectively investigates into the role, importance, and impact of good governance on corporate performance. Similarly, IPO underpricing is a common phenomenon in new issue markets around the globe and has attracted considerable research interest over a decade. As a result, enormous amount of empirical evidence is already present for us to understand the extent of underpricing in various markets and driving factors behind this IPO underpricing as extant literature provides plausible reasons and theory that explain the prevalence of significantly positive initial returns (Ibbotson, Sindelar, & Ritter, 1994). However, only a few research studies have been done in the past that examined the impact of corporate governance practices on IPO underpricing. Whilst a majority of these studies are in context of countries other than Asian economies, literature on role and effect of corporate governance on IPO underpricing in context of Indian listed firms is virtually non-existent. The present paper, therefore, aspires to bridge this gap. One important question that arises from this background is that why and how corporate governance practices are expected to influence the IPO underpricing in the first place ?

Market for initial public offerings is characterized by informational asymmetry owing to naïve companies approaching this market that have no back-record and credentials (Deepak & Gowda, 2014). As per the signalling perspective/theory, entrepreneurs with high firm value are motivated to rely on some sort of signalling or certification mechanism to credibly communicate their value to prospective investors and to convince them that the issue is a good investment. The core of the signalling theory is that the signal should be observable and known

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in advance prior to any transaction offer. This is to ensure that informed investors can reap the benefits of their constant effort to stay updated and can recover the cost of information gathering incurred in the process of evaluation of investment alternatives. Moreover, signals should be costly for lower quality IPO firms to utilize and difficult to imitate.

Signalling theory has been applied in context of IPOs in previous research, but not specifically to corporate governance practices. Traditionally, first time issuers of equity shares signal the value of the firm through several certification mechanisms, for instance, pre-public offering track record of firm, underwriter's reputation, venture capital participation, auditor quality, group affiliation, lock-up agreement and management quality, etc. Besides these, role of corporate governance as certification mechanism has emerged as a new area of research, however, its credibility as effective certification mechanism is still questionable. Therefore, before we proceed with literature review, it will be sensible to understand why and how corporate governance is expected to be an influential factor in IPO pricing ?

IPO Pricing and Corporate Governance Practices

It is now widely accepted that good governance practices often add to firm's value, increase company's competitiveness, and provide better access to capital (Shleifer & Vishny, 1997). According to Sanders and Boivie (2004), corporate governance parameters of a new issuer can serve as a shortlisting criterion while evaluating the value of the issuing firm and hence possess signalling qualities. Corporate governance structure of an organization is made of various internal and external corporate governance mechanisms. In the present study, we emphasize the role of "effective board" as a signalling/ certification mechanism.

Corporate Board as Signalling or Certification Mechanism

According to Fama and Jensen (1983), a board dominated by outside directors may signal the existence of effective control systems which can be crucial for new issuers. Board of directors can be expected to serve as a signalling mechanism because it is consistent with the two core principles of signalling theories as discussed previously, that is, observable/known in advance and costly to imitate. This is because directors' information is mentioned in prospectuses, which makes it observable and known well in advance. Likewise, outside directors would be reluctant to join lower quality firms, for it may hamper their reputation as expert decision makers (reputational cost) which makes it costly for lower quality firms to have reputed outside directors on their board. As per Johnson, Daily, and Ellstrand (1996), "board effectiveness" is a function of board structure which is made of size of board and board independence measured by proportion of independent directors, CEO non-duality, and existence of audit committee.

Literature Review

The following discussion focuses on reviewing the extant literature on "elements of effective board and ownership structure" and how these are critical for firms issuing new securities.

(1) Board Size : In practice, board size should be such that it is small enough to stimulate and provide an environment for meaningful debate and discussion, and at the same time its big enough to bring a variety of opinion, knowledge, and experience. Dalton, Daily, and Johnson (1999) reported that larger boards are beneficial, especially for smaller firms. Since firms undertaking IPOs are typically small firms, it may be beneficial for IPO issuing firms as well. The benefit of having a large board in small firms is believed to accrue from reduced

uncertainty due to better access to resources. Previous research on impact of board size on IPO underpricing showed mixed results, some researchers such as Certo, Daily, and Dalton (2001) reported negative relationship between board size and underpricing. Contrary to this, Hearn (2011) found a positive relationship between board size and underpricing, while some other studies did not find any significant association between the two. An overview of past literature implies that the relationship between board size and corporate performance has not been unequivocally established; hence, it may be quite possible that board size has nothing to do with corporate performance, rather it is board composition that matters. Therefore, whatsoever be the board size, it should always be an optimum combination of executive, non-executive, and independent directors.

(2) Board Independence : Board independence is often measured by the proportion of outside directors on board. Extant literature largely favours independent board over insider dominated board. Beasley (1996) reported an inverse relationship between probability of financial statement fraud and proportion of outside directors on board. Likewise, Vafeas (2000) called an independent board equivalent to an "effective monitoring system" which improves the quality of financial disclosures and reporting. Board independence may also reduce the concerns of regulatory interference. According to Dechow, Sloan, and Sweeney (1996), firms with a majority of outside directors on board face lesser accounting enforcement actions by SEC for alleged GAAP violations. Moreover, some studies have also reported positive market response towards the appointment of outside directors.

Rosentein and Wyatt (1990) found that appointment of an outside director was significantly and positively related to positive excess returns. However, evidence from extant literature on the relationship between board independence and IPO underpricing is found to be mixed. Based on a study of Taiwanese IPO firms, Lin and Chuang (2011) reported a significant negative influence of proportion of independent directors on underpricing. Similarly, Filatotchev and Bishop (2002) found that in the U.K., IPOs of firms which had more than 33% of their directors on board as non-executive directors observed lower underpricing. On the other hand, Yatim (2011) reported no association between board independence and underpricing of Malaysian IPOs.

(3) CEO Duality : 'CEO duality' refers to a situation where a single person holds the position of both CEO and Chairman of a company. The separation of CEO and chairman position has been subject to considerable debate with both proponents and opponents having their own justification. Proponent of CEO duality argue that otherwise, it will cause inefficiency due to reduced autonomy of CEO and lack of unity of command. On the other hand, opponents argue that a separation of CEO - chairman position will bring independence to board, and it will help both CEO and chairman to concentrate on the task which they are entrusted with. Extant literature majorly supports the separation of the CEO - chairman position. Jensen and Meckling (1976) and Fama and Jensen (1983) reported that the CEO-chairman separation empowers the board to control opportunistic behaviour of management and controlling shareholders. Furthermore, it is not only the clear demarcation between CEO and chairman position that matters, but also the type of director chairing the board even in the absence of CEO - duality. A non-executive director as the chairman of the board advances the board legitimacy (Hung, 1998).

(4) Concentration of Ownership : The ownership structure, that is, concentrated or dispersed says a lot about the presence of potential agency problem in the firm which indirectly influences the firm's valuation (Lemmon & Lins, 2003). Amongst firms with dispersed ownership, such as found in countries like UK, USA, Canada, Japan, and Ireland, the common agency problem to arise is between management and shareholders, that is, Agency Problem I (Jensen & Meckling, 1976) ; whereas, in firms characterized with concentrated ownership, agency problem arises from misalignment of interest of controlling shareholders with those of minority shareholders, that is, Agency Problem II (Shleifer & Vishny,1997). Li and Simerly (1998) observed that the concentrated ownership structure serves as a monitoring mechanism that aligns the management's interest with that of

shareholders and protects the interest of minority shareholders in this process. Contrary to this, Shleifer and Vishny (1997) pointed out that controlling shareholders might also exploit minority shareholders. In context of IPO underpricing, Pham, Kalev, and Steen (2003) and Chen and Strange (2004) found a negative relationship between proportion of shareholding and IPO underpricing based on a sample of Australian and Chinese IPOs, respectively.

(5) Retained Ownership : According to Jensen and Meckling (1976), the post-IPO retained ownership of promoters is a signal of good quality of firm as the promoter will be foregoing the diversification of their investment portfolio to retain ownership in the firm, and promoters will be willing to do so when they believe that the firm will go a long way. Another perspective that explains the potential benefit of retained ownership relies on signalling theory and informational asymmetry prevailing in the new issue market. It posits that insiders (promoters, directors, and managers) have access to unpublished price-sensitive information, which put them at an advantage, that is, there is informational asymmetry between corporate insider and outside investors (Lawless, Ferris, & Bacon, 1998 ; Myers & Majluf, 1984). Therefore, any change in ownership of insiders will amount to a significant signal to market about the prospects of the firm. Precisely, greater the percentage of retained ownership, the better the prospects of the firm. Rosenstein and Wyatt (1997) reported that market responds positively to appointment of an inside director provided the management holds a significant portion of a firm's equity. If it is true, then IPO firms with a high percentage of retained ownership shall experience lower underpricing due to reduced informational asymmetry about a firm's value.

Objectives of the Study

(i) To examine the effect of board size on IPO underpricing.

(ii) To investigate the influence of outside directors on IPO underpricing.

(iii) To examine the influence of leadership structure of the board on IPO underpricing.

(iv) To study the impact of ownership structure (concentrated/dispersed) on IPO underpricing.

(v) To examine the impact of retained ownership of promoters on IPO underpricing.

Hypotheses Development

Based on the literature review, the following hypotheses are formulated :

- **H_1 :** There is a statistically significant relationship between board size and IPO underpricing.
- **H_2:** Board independence shall be negatively related to IPO underpricing.
- **H_3:** CEO duality will be positively associated with underpricing.
- **H_4:** Concentrated ownership structure is positively associated with underpricing.
- **H_5:** Percentage of retained ownership by promoters is negatively related to underpricing.

Research Design and Methodology

(1) Sample and Data Collection : The sample used in the present study includes Mainline IPOs issued in India during the period of March 20, 2012 to March 20, 2017 (i.e. 5 years) that were listed and traded on NSE. A total of 59 IPOs were issued during the sample period, the description of which is presented in the Table 1. The final

Table 1. Description of IPOs Issued During the Sample Period

Year	2017	2016	2015	2014	2013	2012	Total
Total Issues Succeeded	2	26	21	5	3	2	59
Total Issues Failed	0	1	0	2	2	0	5
Total Funds Raised (₹ Cr.)	727.48	26,372.48	11,362.30	1,200.94	1,283.95	688.31	

sample comprised of 45 IPOs which was obtained by excluding the IPOs owing to data unavailability (1) and IPOs that belonged to financial services firms (nos. 8) because they are subject to different corporate governance norms and regulations (Mnif, 2009). Data pertaining to corporate governance variables and firm specific data were collected from the final prospectuses of firms filed with Registrar of Company (RoC) which were downloaded from the website of Security Exchange Board of India (SEBI). In addition, other issue - related data such as issue price, listing price, opening and closing price on listing day, etc. were collected from the website of www.chittorgarh.com. The list of top five underwriters in India was obtained from Bloomberg (2017). Information of top five global auditing firms was collected from the report based on research conducted by CA magazine ("The top 30 accountancy firms for 2017 revealed," 2017).

(2) Operationalization of Variables and Statistical Models : The present study focuses on examining the role board related to corporate governance variables in influencing the IPO underpricing via signalling the value of the firm in an investment environment characterized by informational asymmetry. Our focus here will be two-fold ; firstly, we want to see whether board related corporate governance attributes and ownership structure have any signalling capacity ; secondly, we want to study the nature of relationship between board attributes and IPO underpricing and its significance thereof. To achieve the said objectives, we have used the hierarchical linear multiple regression model, which is a useful procedure for testing if a predictor accounts for significant amount of

Table 2. Research Variables, Operationalization, and Expected Relationship

Variables	Operationalization	Expected Relationship
Dependent Variable		
Underpricing	Percentage raw return on listing day calculated as : (closing price on listing day - offer price)/ offer price *100.	None
Independent Variables		
Board size	Total number of directors on board.	
Board independence (D_MajorityIDs)	Dichotomous with 1 if the proportion of independent directors is more than 0.5 and 0 otherwise.	Negative
CEO Duality	Dichotomous with 1 if the CEO and chairperson roles are not separate and 0 otherwise.	Positive
Concentrated Ownership (Block Holders)	No. of shareholders holding shares more than 10% of the total shares as on the date of filing the final prospectus.	Positive
Retained Ownership	Percentage of ownership retained by the promoters after IPO.	Negative
Control Variables		
Venture Capital Affiliation	Dichotomous with 1 if VC investment is present at the time of IPO and 0 otherwise.	Negative
Auditor's Reputation	Dichotomous with 1 if the Statutory Auditor of the firm is amongst top 5 and 0 otherwise.	Negative
Underwriter's Reputation	Dichotomous with 1 if the Underwriter of the issue is amongst top 5 and 0 otherwise.	Negative
Total Number of Risk Factors	Absolute number of internal and external risk factors.	Positive

unique variance above and beyond one or more predictors that have already been entered in the model.

(i) Dependent Variables : Adopting from Certo et al. (2001) and Arthurs, Hoskisson, Busenitz, and Johnson (2008), IPO underpricing is the dependent variable used in the present study which is raw return on listing day calculated as follows :

$$\text{IPO Underpricing } (UP) = \frac{P_1 - P_0}{P_0}$$

where,

P_1 : Closing price on listing day on NSE.
P_0 : Initial offer price or issue price.

(ii) Independent Variables : Underpricing is regressed against the independent variables, that is, board size, board independence, leadership structure, and ownership structure. The operationalization of independent variables and their expected relationship with dependent variable is described in the Table 2.

(iii) Control Variables : The present model controls for the effect of venture capital affiliation, underwriter's reputation, auditor's reputation, and total number of risk factors. Data pertaining to control variables were collated from final prospectuses of the respective companies.

Finally, the present study tests the following functional model:

$$Underpricing = \beta_0 + \beta_1 (Board\ Size) + \beta_2 (Board\ Independence) + \beta_3 (CEO\ Duality) + \beta_4 (Concentrated\ Ownership) + \beta_5 (Retained\ Ownership) + \alpha_i (Control\ Variables) + \varepsilon_i.$$

Empirical Results and Analysis

(1) Testing for Assumptions : Dependent variable 'underpricing' is tested for normality for each continuous independent variable (viz. block holders, post-issue promoter's ownership, board size, and total number of risk factors) and for each category of dichotomous variables (viz. D_majority ID, CEO duality, pre-issue VC backing, underwriter's reputation, and auditor's reputation). None of the independent variables violate the assumption of normality. Further, autocorrelation in error terms is tested using Durbin - Watson test for autocorrelation. The test statistic (1.8272) indicates no potential autocorrelation. As per Field (2009), values of Durbin-Watson test statistic under 1 or more than 3 are a definite cause for concern; hence, our data meets the assumption of independent errors. The results of collinearity statistics of VIF and tolerance tests show that our data meets the assumption of 'no perfect multicollinearity' as values of VIF statistic for all independent variables is less than 10 and values of tolerance statistic is close to 1. The results of Shapiro - Wilk test for normality of residual terms indicates that residuals are normally distributed [$W(45) = 0.973$, $p = 0.362$] (see Appendix Table A.1, Appendix Figure 1, and Appendix Figure 2). Assumption of homoscedasticity has been tested through Koenker-Bassett test because of the small sample size [1] . Initial inspection of scatter plot of standardized residuals with standardized predicted values led us to believe that heteroskedasticity was occurring (see Appendix Figure 3). However, a follow up test for its statistical significance fails to support this conclusion [$B^{Koenker}(9) = 9.897$, $p = 0.359$](see

[1] The Koenker test is preferred over the Breusch-Pagan test because B-P test requires a large sample and residual terms to be normally distributed. Although our residuals are normally distributed according to the Shapiro-Wilk test, they are not large enough, so we use the Koenker test, which is rather a modified B-P test and free from assumptions of a large sample size and normality of residual.

Table 3. Descriptive Statistics

Variables	Mean	Median	Mode	*S.D.*	Variance	Minimum	Maximum
Underpricing	10.27	7.74	-100	28.07	788.13	-100	70.21
Board Size	8.51	8	8	2.05	4.21	5	12
D_MajorityID	.07	0	0	.252	.064	0	1
CEO Duality	.04	0	0	.208	.043	0	1
Block holders	2.93	3	3	1.21	1.47	0	5
Post issue promoter's ownership	50.92	53	28	18.59	345.7	20	95
Pre-issue VC Backing	.42	0	0	.499	.249	0	1
Underwriter's reputation	.67	1	1	.477	.227	0	1
Auditor's reputation	.16	0	0	.367	.134	0	1
Total no. of risk factors	67.98	67	58	12.82	164.39	37	103

Appendix Table A.2). Finally, continuous independent variables are found to be linearly related to the dependent variable. *F*-statistics of linear curve estimation for post issue promoter's ownership ($F = 8.495$), board size ($F = 7.299$), block holders ($F = 8.275$), and total number of risk factors ($F = 7.876$) are statistically significant with $p < 0.05$ (see Appendix Table A.3). In Table 3, we can observe non - zero positive variance of continuous independent variables, that is, board size (4.21), block holders (1.47), post issue promoter's ownership (345.7), total number of risk factors (164.39), and dependent variable underpricing (788.13). Hence, the data also meets the assumption of non-zero variance.

(2) Descriptive Statistics : The Table 3 presents the descriptive statistics of dependent variables, independent variables, and control variables. The explained variable -underpricing of IPOs listed on NSE measures the initial return to IPO firms and varies considerably during the sample period, ranging from - 100% (issue price > closing price on listing day) to 70.21%. The average underpricing during the selected sample period is 10.27% with standard deviation of 28.07%. The sample period reports a comparatively lower level of underpricing. The average board size in sample firms is eight directors ranging from a minimum five directors to a maximum of 12 directors, which is within the statutory limits of minimum of three and maximum of 15 directors. Out of the 45 sample firms, only two firms have combined CEO - Chairman position. In almost all firms, the chairman of the board is an executive director and promoter of the company, while there are only six firms where the chairman is an independent director.

There are 14 firms (31.11%) that have the managing director as the chairman of the board. It is said that the CEO is popularly known as the managing director in Indian context. Only four firms have more than 50% of their board comprised of independent directors. It appears that firms look out for participation of independent directors on board merely to meet the regulatory requirements. The average number of shareholders holding more than 10% of total shareholding at the time of issue is three, ranging from 0 to 5. This presents a picture of rather concentrated ownership structure among the sample firms. On an average, promoter's shareholding post IPO is 50.92% of total equity capital ranging from 20% to as high as 95%, which implies considerable variability in post issue promoter's ownership in sample firms. A total of 19 firms had VC investment at the time of issue ; 31 (68.89%) firms had gotten their issue underwritten by one or more of top underwriters of India. Only seven firms had top five auditing firms as their statutory auditor. On an average, an IPO involves 68 various internal and external risk factors.

(3) Correlation Analysis : The Table 4 presents the correlation between dependent, independent variables and control variables. The dependent variable underpricing positively and significantly correlates with the control

Table 4. Pearson's Correlation Coefficient Matrix

Variables	Underpricing	Board Size	D_Majority ID	CEO Duality	Block Holders	Post Issue Promoter's Ownership	Pre-issueVC Backing	Under-writer's Reputation	Auditor's reputation	Total No. of Risk Factors
Underpricing	1.000	0.182	-0.174	0.064	0.216	0.238	-0.170	0.241	0.146	0.282 **
		(0.232)	(0.252)	(0.674)	(0.155)	(0.115)	(0.265)	(0.110)	(0.337)	(0.061)
Board Size		1.000	0.196	0.052	0.114	-0.016	0.295*	0.039	-0.078	-0.063
			(0.197)	(0.735)	(0.454)	(0.917)	(0.049)	(0.801)	(0.611)	(0.679)
D_MajorityID			1.000	-0.058	0.163	-0.050	0.313 *	-0.189	-0.115	-0.021
				(0.707)	(0.284)	(0.743)	(0.037)	(0.214)	(0.453)	(0.893)
CEO Duality				1.000	0.102	-0.011	0.034	0.152	0.205	0.094
					(0.506)	(0.944)	(0.825)	(0.317)	(0.177)	(0.539)
Block holders					1.000	-0.252 **	0.197	-0.039	0.075	0.079
						(0.095)	(0.194)	(0.798)	(0.625)	(0.607)
Post issue						1.000	-0.208	0.104	-0.065	0.123
promoter's ownership							(0.170)	(0.498)	(0.672)	(0.422)
Pre-issue VC Backing							1.000	-0.255 **	0.006	0.211
								(0.092)	(0.971)	(0.164)
Underwriter's reputation								1.000	0.043	-0.076
									(0.777)	(0.622)
Auditor's reputation									1.000	0.015
										(0.921)
Total no. of risk factors										1.000

Note: *N* = 45; values in parentheses indicate significance of correlation coefficient.
*. Correlation is significant at the 0.05 level (2-tailed);
**. Correlation is significant at the 0.05 level (2-tailed).

variable - total number of risk factors at the 10% significance level. The positive Point- Biserial correlation between dichotomous variable - pre-issue VC backing and continuous variable - board size is significant at the 5% level ($r_{pb} = 0.295, n = 45, p = .049$). Independent variable - block holders correlates negatively with post issue promoter's ownership and is significant at the 10% level. This implies that in firms characterised with concentrated ownership structure at the time of issue, promoters hold a significant portion of equity capital post - IPO offering as well.

To examine the direction of association between the two dichotomous variables, chi-square test for independence has been used, the results of which are presented in the Appendix Table A.4. The Table reports the Pearson chi-square statistic and Phi and Cramer's V, which are tests of strength of association. As can be seen, there is a statistically significant positive association between D_MajorityID (which is a measure of board independence) and pre-issue VC backing ($\chi^2(1) = 4.398, p = 0.036$). Further, Phi and Cramer's V indicates that the strength of association between the variables is strong. Apart from this, there is no significant association between any pair of dichotomous variables. The examination of correlation matrix and results of chi-square test for initial diagnosis of multicollinearity do not provide any significant evidence in support of multicollinearity as we will see in the following section of regression analysis. The VIF and tolerance results also conform to this result.

(4) Regression Analysis : The Table 5, Table 6, and Table 7 present the hierarchical multiple regression outputs. The Model 1 includes only control variables whilst Model 2 includes both control and independent variables. The Table 5 reports the unstandardized beta coefficients and their p - values. The control variable - total number of risk factors - is positively and significantly associated with underpricing in both the models, which implies that IPOs of firms that have disclosed greater number of risk factors - both internal and external - tend to be more underpriced. This result is consistent with the findings of Certo et al. (2001) and contradictory to the findings of Yatim (2011). This might be due to firms pricing their IPOs low to attract the investors who otherwise would not be interested in buying high - risk issues. This way, risky firms offer a bonus to such early investors who invest in stocks despite the associated high risk. Pricing an issue low will allow the initial investors to book profits on listing day in the form of higher initial returns. Other control variables, that is, pre - issue VC backing, underwriter's reputation, and auditor's reputation do not seem to have a statistically significant impact on extent of underpricing. However, sign of their beta coefficients warrant some discussion. Both auditor's and underwriter's reputation have a positive and insignificant impact on underpricing, that is, IPOs underwritten by reputed underwriting firms and associated with reputed auditing firms experience greater underpricing. This is consistent with the findings of Carter, Dark, and Singh (1998); Beatty and Ritter (1986); and Mnif (2009), but contradicts with the results of studies by Certo et al. (2001), Yatim (2011), and Darmadi and Gunawan (2013). Pre-issue VC backing has a negative but insignificant effect on the level of underpricing. The negative beta coefficients suggest that IPOs of firms that have history of venture capital funding can better price their issues and hence experience lower underpricing. Venture capital investment may be a signal of firm value, but there is no statistically significant evidence to conclude this. Overall, undewriter's reputation, auditor's reputation, and VC backing, which are traditional signalling mechanisms in new issue markets, appear to be less effective as a quality signal as per the present sample data.

The main attraction of the present study is the effect of board related corporate governance attributes of IPOs on their underpricing. The Model 2 takes into account both control variables and independent variables of our interest. Model 2 tests if a predictor accounts for a significant amount of unique variance above and beyond one or more predictors that have already been entered into the model. Underpricing positively and significantly correlates with board size and number of block holders is a measure of concentrated ownership structure at the time of issue. This means that IPOs of firms with large boards experience greater underpricing as compared to that of firms with small boards. In this context, the agency theory might lend some support to this result. According to the agency theory, small corporate boards are more effective monitors than large boards because they have a high degree of membership coordination, fewer communication difficulties, and a lower incidence of severe free - rider problems. Hearn (2011) and Mnif (2009) also found similar results. Our results are, however, inconsistent with the findings of Yatim (2011), Certo et al. (2001), and Darmadi and Gunawan (2013). Furthermore, it is imperative to mention that board size can be said to be statistically significant only at the 0.10 level of significance and the same applies to a number of block holders. Consequently, if we are to reject the null hypothesis, that board size has no statistically significant impact on the level of underpricing (in support of H_1) to conclude that board size has a statistically significant impact on underpricing, then we can do so only with a 90% confidence level. Likewise, hypothesis H_4, that is, concentrated ownership structure is positively associated with underpricing can be supported only by increasing the chances of making a Type 1 error by 5% (i.e. $\alpha = 10\%$).

As per our initial prediction, board independence (measured by majority proportion of independent directors on board) negatively affects underpricing. This effect, however, is not statistically significant and hence lends week support for H_2. Our results pertaining to the effect of board independence on underpricing cannot be compared with previous studies in the same area for difference in operationalization of board independence. Majority of the literature on board independence and underpricing measured the independence of the corporate board in terms of proportion of independent directors or outside directors on board, so greater the proportion, the greater is the independence. Unlike previous studies, the present study considers a corporate board as

Table 5. Hierarchical Multiple Regression Partial Slope Coefficients

Model		Unstandardized Coefficients		*t* statistics	Sig. (*p* - value)	Collinearity Statistics	
		B	Std. Error			Tolerance	VIF
1	(Constant)	-45.145	22.654	-1.993	0.053		
	Pre-issue VC Backing	-10.498	8.402	-1.249	0.219	0.898	1.113
	Underwriter's reputation	12.574	8.639	1.456	0.153	0.933	1.072
	Auditor's reputation	10.186	10.865	0.938	0.354	0.998	1.002
	Total no. of risk factors	0.734*	0.317	2.311	0.026	0.955	1.047
2	(Constant)	-105.582	29.906	-3.530	0.001		
	Pre-issue VC Backing	-13.887	8.955	-1.551	0.130	0.706	1.417
	Underwriter's reputation	9.289	8.409	1.105	0.277	0.878	1.138
	Auditor's reputation	11.237	10.617	1.058	0.297	0.932	1.073
	Total no. of risk factors	0.692*	0.312	2.219	0.033	0.883	1.132
	Board Size	3.849**	1.980	1.944	0.060	0.856	1.169
	D_MajorityID	-15.416	16.226	-.950	0.349	0.843	1.187
	CEO Duality	-8.129	18.852	-.431	0.669	0.915	1.093
	Block holders	6.572**	3.305	1.989	0.055	0.878	1.139
	Post issue promoter's ownership	0.316	0.217	1.454	0.155	0.864	1.157

Note: The dependent variable is percentage of underpricing of IPOs listed at NSE. *N* = 45. All regression produces unreported standardized beta coefficients.

* Significant at 0.05 level.

** Significant at 0.10 level.

Table 6. Hierarchical Multiple Regression Model Summary

Model	*R*	*R* Square	Adjusted *R* Square	Std. Error of the Estimate	Change Statistics					Durbin Watson
					R Square Change	*F* Change	*df*1	*df*2	Sig. *F* Change	
1	.444[a]	.197	.117	26.38276	.197	2.455	4	40	.061	
2	.611[b]	.373	.212	24.92292	.176	1.965	5	35	.108	1.827

a. Predictors: (Constant), Total no. of risk factors, auditor's reputation, underwriter's reputation, pre-issue VC backing

b. Predictors: (Constant), Total no. of risk factors, auditor's reputation, underwriter's reputation, pre-issue VC backing, block holders, CEO duality, post issue promoter's ownership (%), board size, D_MajorityID

independent of management if a majority of directors (i.e. greater than 50%) are independent directors.

Contrary to our initial prediction, existence of a dual leadership structure is negatively associated with underpricing, that is, IPOs of firms where the position of CEO and chairman is held by a single person experience lower underpricing than the IPOs of firms with separate board leadership structure. This can be theorized as : instead of viewing CEO duality as a threat to board independence (and consequently, firm's performance), investors perceive it as a medium to prevent inefficiency resulting from reduced autonomy of CEO and unity of command in case of separate leadership. This association is, however, not statistically significant to allow us the rejection of a null hypothesis that CEO duality has no significant impact on the level of underpricing in support of H_3. Therefore, we report that leadership structure has no significant impact on underpricing. This finding is,

however, inconsistent with the findings of Yatim (2011) and Certo et al. (2001), but is in line with the findings of Mnif (2009).

Finally, post issue promoter's ownership as a measure of retained ownership is positively but insignificantly associated with underpricing; this lends a weak support to H_5. This is contrary to prediction that retained ownership shall negatively be associated with underpricing.

The Table 6 presents the coefficient of determination and adjusted R^2 for both Model 1 and Model 2. Control variables alone explain 19.7% of the variance in underpricing when taken together. The explanatory power of the Model increases by another 17.6% when board related corporate governance variables and ownership structure related variables are included in the model, such that Model 2 explains approximately 37.3% of the variance in level of underpricing. R^2 gets reduced for both the Models when adjusted for a number of predictors in the model. The adjusted R^2 tells us the percentage of variation explained by only the independent variables that actually affect the dependent variable, and it increases only if the new term improves the model more than what would be expected by chance. It decreases when a predictor improves the model by less than expected by chance. As can be seen, the adjusted R^2 for Model 1 and Model 2 is 11.7% and 21.2%, respectively and a significant proportion of variance in underpricing remains unexplained by the Model. While some statistical significance is encountered in Table 7, the economic significance of these Models is disputable.

The Table 7 signifies the overall goodness of fit of the regression models and tests a joint null hypothesis that all partial slope coefficients of the regression equation are simultaneously zero.

$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \alpha_i = 0$
H_1 = At least one partial slope coefficient is non-zero.

where,

β_1 = Slope coefficient for board size,
β_2 = Slope coefficient for board independence,
β_3 = Slope coefficient for CEO duality,
β_4 = Slope coefficient for concentrated ownership,
β_5 = Slope coefficient for retained ownership,
α_i = Slope coefficient for control variables.

Model 1 is reported to be insignificant at the 5% level of significance [$F(4,40) = 2.455$, $p = 0.061$]. However, it can be said to be significant if one is willing to compromise by letting the Type 1 error increase to 10%. Model 2, however, is statistically significant at the 5% level of significance [$F(9,35) = 2.314$, $p = 0.037$]. Hence, we reject

Table 7. Hierarchical Multiple Regression Model Significance

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.	Comment
1	Regression	6835.597	4	1708.899	2.455	.061[b]	Reject null hypothesis at α = 0.10
	Residual	27842.003	40	696.050			
	Total	34677.600	44				
2	Regression	12937.285	9	1437.476	2.314	.037[c]	Reject null hypothesis at α = 0.05
	Residual	21740.314	35	621.152			
	Total	34677.600	44				

b. Predictors: (Constant), Total no. of risk factors, auditor's reputation, underwriter's reputation, pre-issue VC backing.

c. Predictors: (Constant), Total no. of risk factors, auditor's reputation, underwriter's reputation, pre-issue VC backing, block holders, CEO duality, Post issue promoter's ownership (%), board size, D_MajorityID.

the null hypothesis that Model 2 has no explanatory power by concluding that at least one of the predictor variables in Model 2 explains a portion of total variance in underpricing that is statistically significant and not merely by chance. As observed in the Table 6, the adjusted *R*-square of Model 2 is 21.2%, although it is statistically significant, its practical and economic significance is questionable as a significant percentage of total variance in underpricing is still unexplained.

We can now formulate the following estimating equation based on unstandardized beta coefficients of Model 2.

Estimated Underpricing = –105.582 + 3.849(Board Size) – 15.416(Board Independence) – 8.129(CEO Duality) + 6.572(Concentrated Ownership) + 0.316(Retained Ownership) – 13.887(Pre-issue VC backing) + 9.289(Underwriter's reputation) + 11.237(Auditor's reputation) + 0.692(Total number of risk factors).

Discussion

The present study primarily focuses on examining the impact of board related corporate governance factors on underpricing and secondly, the influence of nature of ownership structure on underpricing. By testing for hypotheses stated here in this study, an attempt has been made to judge the effectiveness of these board characteristics and ownership structure as a market signal to potential investors about performance, management, and prospects of IPO issuing firms. For this, a statistically significant slope coefficient of independent variables is taken as an indicator of potential to serve as a certification mechanism for new issue market. The findings of the present study demonstrate that none of the board related corporate governance variables have a significant impact on underpricing. However, with increased probability of Type 1 error, board size becomes a statistically significant predictor of underpricing. In that case, IPOs of firms with a large board experience greater underpricing as compared to that of firms with small boards, partly due to the reduced degree of membership coordination and increased communication difficulties. Likewise, total number of block holders positively associate with underpricing; however, it is significant at the 10% significance level. This means that issuing firms with diluted ownership structure experience greater underpricing. Board independence and leadership structure have no significant impact on underpricing. So, we can say that board size and concentrated ownership might signal the firm performance and consequently, impact underpricing. However, their practical significance is questionable.

Research Implications

This study contributes to the existing literature by proposing that presence of independent directors on board is more informative than presence of non - executive directors. Also, merely meeting the regulatory requirement while determining the board composition does not send a quality signal. Only those firms which go beyond the minimum regulatory requirements pertaining to corporate governance norms catch some attention of investors. An important implication of this study for issuing firms is that they should increase the participation of independent directors on board to convey the investor community that firm's management is monitored by an independent board. Also, firms should take the corporate governance practices in their true spirit.

Limitations of the Study and Scope for Further Research

The sample for the present study comprises of only Mainline IPOs issued in India and does not include SME IPOs. Further, we exclude the financial services firms because they are subject to different corporate governance

norms and regulations. The present study examines the impact of corporate governance variables on initial returns on listing day. Future research in this area may examine the impact of corporate governance on underpricing for a longer period such as two weeks and three months and amongst SME IPOs since good governance involves a lot more than compliance. Good corporate governance is a culture and a climate of consistency, responsibility, accountability, fairness, transparency, and effectiveness that is deployed throughout the organization ('CRAFTED' principles of governance) and one can develop an index of good governance to capture broader aspects of governance.

References

Arthurs, J. D., Hoskisson, R. E., Busenitz, L. W., & Johnson, R. A. (2008). Managerial agents watching other agents: Multiple agency conflicts regarding underpricing in IPO firms. *Academy of Management Journal, 51* (2), 277 - 294.

Beasley, M. S. (1996). An empirical analysis of the relation between the board of director composition and financial statement fraud. *The Accounting Review, 71*(4), 443 - 465.

Beatty, R., & Ritter, J. (1986). Investment banking, reputation and the under-pricing of initial public offerings. *Journal of Financial Economics, 15*(1 - 2), 213 - 232.

Bloomberg. (2017, April3). *Bloomberg global equity capital market league tables Q1 2017.* Retrieved from https://www.bloomberg.com/professional/blog/global-equity-capital-market-league-tables-q1-2017/

Carter, R., Dark, F., & Singh, A. (1998). Underwriter reputation, initial returns and the long-run performance of IPO stocks. *Journal of Finance, 53* (1), 285 - 311.

Certo, S. T., Daily, C. M., & Dalton, D. R. (2001). Signalling firm value through board structure: An investigation of initial public offerings. *Entrepreneurship Theory & Practice, 26* (2), 33 - 50.

Chen, J., & Strange, R. (2004). *The effect of ownership structure on the underpricing of initial public offerings: Evidence from Chinese stock markets* (Working Paper 029). Retrieved from http://ibrarian.net/navon/paper/The_Management_Centre_Research_Papers.pdf?paperid=1744319

Darmadi, S., & Gunawan, R. (2013). Underpricing, board structure, and ownership: An empirical examination of Indonesian IPO firms. *Managerial Finance, 39* (2), 181 - 200.

Dalton, D.R., Daily, C.M., & Johnson, J.L. (1999). Number of directors and financial performance: A meta-analysis. *Academy of Management Journal, 42*(6), 674 - 686.

Dechow, P. M., Sloan , R. G., & Sweeney, A. P. (1996). Causes and consequesnces of earning manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research, 13* (1), 1 - 36.

Deepak, R., & Gowda S. (2014). Informational asymmetry between informed and retail investors while investing in the Indian IPO market. *Indian Journal of Finance, 8*(9), 32 - 46. DOI:10.17010/ijf/2014/v8i9/71850

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics, 26* (2), 301 - 325.

Field, A. P. (2009). *Discovering statistics using SPSS: (and sex and drugs and rock 'n' roll).* Los Angeles, London: SAGE Publications.

Filatotchev, I., & Bishop, K. (2002). Board composition, share ownership, and 'underpricing' of U.K. IPO firms. *Strategic Management Journal, 23* (10), 941 - 955.

Hearn, B. (2011). The impact of corporate governance measures on the performance of West African IPO firms. *Emerging Markets Review, 12* (2), 130 - 151.

Hung, H. (1998). A typology of the theories of the roles of governing boards. *Corporate Governance: An International Review, 6* (2), 101-111.

Ibbotson, J., Sindelar, J., & Ritter, J. (1994). The market's problem with the pricing of initial public offerings. *Journal of Applied Corporate Finance, 7*(1), 66 - 74.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics, 3* (4), 305 - 360.

Johnson, J. L., Daily, C. M., & Ellstrand, A. E. (1996). Board of directors: A review and research agenda. *Journal of Management, 22*(3), 409 - 438.

Lawless, R. M., Ferris , S. P., & Bacon, B. (1998). The influence of legal liability on corporate financial signaling. *Journal of Corporation Law, 23,* 209-243. Retreived from https://ssrn.com/abstract=2309638

Lemmon, M. L., & Lins, K. V. (2003). Ownership structure, corporate governance, and firm value: Evidence from the East Asian financial crisis. *The Journal of Finance, 58* (4), 1445 - 1468.

Li, M., & Simerly, R. L. (1998). The moderating effect of environmental dynamism on the ownership and performance relationship. *Strategic Management Journal, 19* (2), 169 - 179.

Lin, C. P., & Chuang, C. M. (2011). Principal-principal conflicts and IPO pricing in an emerging economy. *Corporate Governance: An International Review, 19* (6), 585 - 600.

Mnif, A. (2009, May). *Board of directors and the pricing of initial public offerings (IPOs): Does the existence of a properly structured board matter? Evidence from France.* Strasbourg, France: La place de la dimension europëenne dans la Comptabilite' Controle Aaudit. Retrieved from https://halshs.archives-ouvertes.fr/halshs-00459257

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13* (2), 187-221.

Pham, P. K., Kalev, P. S., & Steen, A. B. (2003). Underpricing, stock allocation, ownership structure and post-listing liquidity of newly listed firms. *Journal of Banking and Finance, 27*(5), 919 - 947.

Rosentein, S., & Wyatt, J. G. (1990). Outside directors, board independence and shareholder wealth. *Journal of Financial Economics, 26*(2), 175-191.

Rosenstein, S., & Wyatt, J. G. (1997). Inside directors, board effectiveness, and shareholder wealth. *Journal of Financial Economics, 44* (2), 229 - 250.

Sanders, W. M., & Boivie, S. (2004). Sorting things out: Valuation of new firms in uncertain markets. *Strategic Management Journal, 25*(2), 167-186.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance, 52*(2), 737 - 783.

The top 30 accountancy firms for 2017 revealed. (2017, December 5). *CA Magazine.* Retrieved from https://www.icas.com/ca-today-news/the-top-30-accountancy-firms-in-2017-revealed

Vafeas, N. (2000). Board structure and the informativeness of earnings. *Journal of Accounting and Public Policy, 19*(2), 139-160.

Yatim, P. (2011). Underpricing and board structures: An investigation of malaysian intial public offerings. *Asian Academy of Management Journal of Accounting and Finance, 7* (1), 73 - 93.

Appendices

Table A.1. Tests of Normality of Residuals

	Kolmogorov - Smirnov[a]			Shapiro-Wilk		
	Statistic	*df*	Sig.	Statistic	*df*	Sig.
Standardized Residual	.079	45	.200*	.973	45	.362

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction.

Table A.2. Breusch - Pagan and Koenker Test Statistics and Sig-Values

Tests	Lagrange Multiplier	Sig.
BP	11.353	0.252
Koenker	9.897	0.359

Null hypothesis: Heteroskedasticity not present (homoscedasticity).

Note: Breusch-Pagan test is a large sample test and assumes the residuals to be normally distributed.

Table A.3. Linearity Test with Curve Estimation

Independent Variables	Model Summary			Comment
	R-Square	*F*-statistic	Sig.	
Board Size	0.142	7.299	0.010	Statistically significant fit.
Post issue promoter's ownership	0.162	8.495	0.006	Statistically significant fit.
Block Holders	0.158	8.275	0.006	Statistically significant fit.
Total Number of Risk factors	0.152	7.876	0.007	Statistically significant fit.

Note: Dependent variable is underpricing.

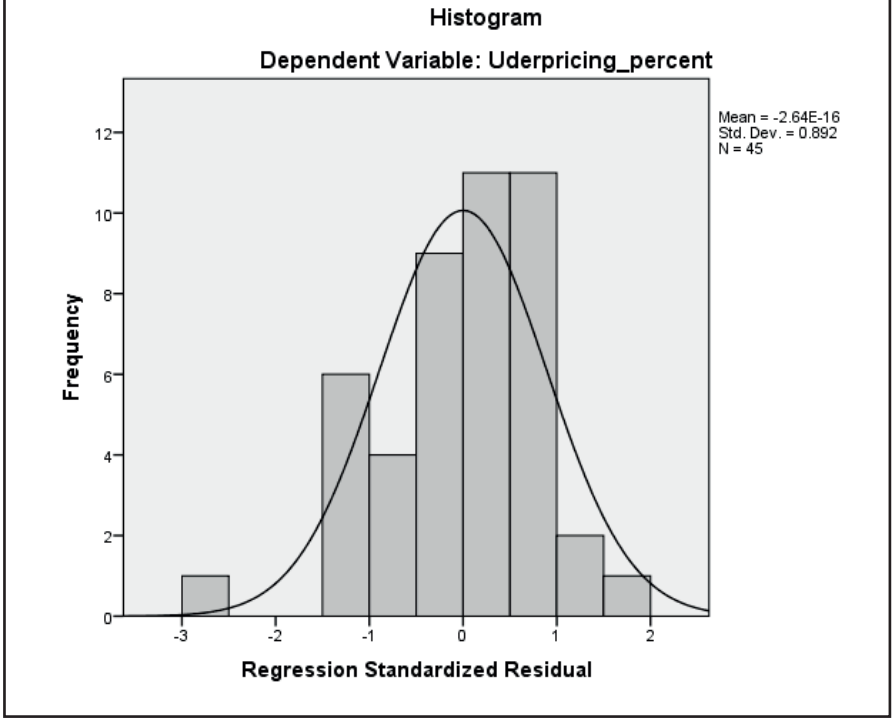
Table A.4. Chi-Square Test of Independence

	D_MajorityID			Pre-issue VC Backing			Underwriter's Reputation			Auditor's Reputation		
		Symmetric Measures			Symmetric Measures			Symmetric Measures			Symmetric Measures	
	χ^2	Phi	Cramer's V	χ^2	Phi	Cramer's V	χ^2	Phi	Cramer's V	χ^2	Phi	Cramer's V
CEO Duality	0.15	-0.059	0.059	0.052	0.034	0.034	1.047	0.152	0.152	1.89	0.205	0.205
	(0.699)	(0.699)	(0.699)	(0.82)	(0.82)	(0.82)	(0.306)	(0.306)	(0.306)	(0.169)	(0.169)	(0.169)
D_MajorityID				4.398	0.313	0.313	1.607	-0.189	0.189	0.592	-0.115	0.115
				(0.036)*	(0.036)*	(0.036) *	(0.205)	(0.205)	(0.205)	(0.442)	(0.442)	(0.442)
Pre-issue VC Backing							2.914	-0.255	0.255	0.01	0.006	0.006
							(0.08)	(0.088)	(0.088)	(0.97)	(0.97)	(0.97)
Underwriter's Reputation										0.085	0.043	0.043
										(0.771)	(0.77)	(0.77)
Auditor's Reputation												

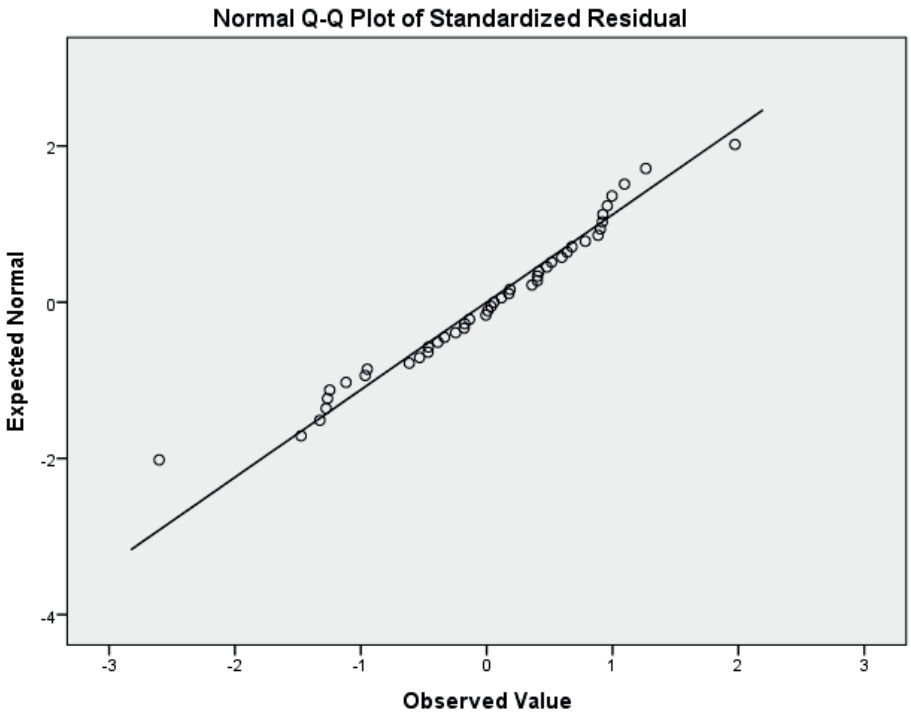
Note: values in parenthesis for Pearson Chi-Square indicates the Asymptotically Significance (2-sided) and values in parenthesis for Symmetric Measures indicates approx. significance.

* Significant at 5% level.

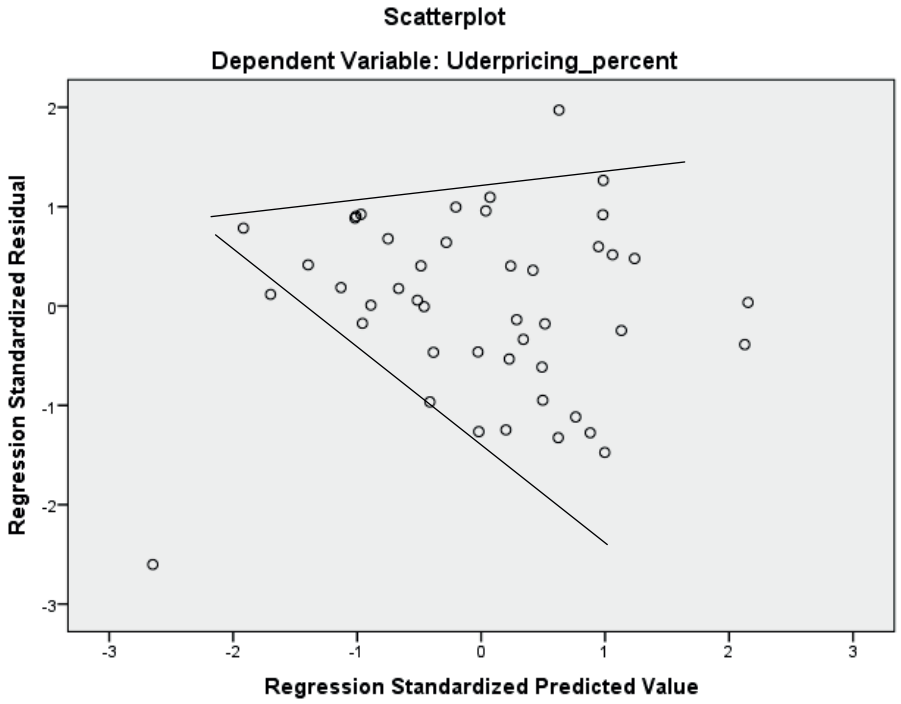
Appendix Figure 1 . Frequency Distribution of Standardized Residual



Appendix Figure 2 . Normal Q-Q Plot of Standardized Residuals



Appendix Figure 3. Scatter Plot of Standardized Residuals and Predicted Values



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