

IPO under Pricing and Its Determinants: The Case of Dhaka Stock Exchange

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ABSTRACT :

This paper aims to investigate determinants of IPO underpricing in the Stock market of Bangladesh. For this purpose, this paper applies multiple regressions for a data set of 75 companies which have been listed with DSE during January 2011 to July 2017. This paper finds that subscription ratio and timing of offer significantly affect underpricing of IPOs in DSE. On the other hand, age and size of the firm, floated shares and premium are found insignificant in DSE.

Key Words : Bangladesh, Initial Public Offering (IPO), Dhaka Stock Exchange (DSE), Underpricing.

INTRODUCTION :

The initial public offering (IPO) is a crucial part in a firm's life and a central issue in corporate finance (Thakur, 2015). That's why this issue has become an attractive issue in the most of literature. The underpricing of initial public offering (IPO) which indicates high initial return is a common phenomenon to most stock markets in both developed and emerging economics (Islam, Ali, and Ahmad, 2010) and (J.R, 1984). A common understanding is that underpricing of IPOs is an irrelevant to efficient market hypothesis. Underpricing may hamper emerging firms raising capital for expansion. According to Ritter (1984), the period a firm chooses to go public largely affected the level of underpricing. Most of the IPO's in Bangladesh are oversubscribed that creates high demand of IPO among investors. This high demand is created because there is a chance to earn high return on first trading day. This situation is referred as underpricing in Initial Public Offering. The

underpricing degree differs from one related variable to another. There were several studies on Malaysian new stock offers such as those by Dawson (1987), Othman Yong (1991 and 1996), Sufar (1987), Ku Ismail *et al.* (1993), Yeap (2006), Taufil (2007) indicate at the time of initial listing there are effective returns received by investors. Hoque and Musa (2002) found that the IPOs of DSE during the period between 1994 and 2001 was largely underpriced (285.21%).

The goal of this study is to pursue the factors affecting the IPO underpricing in Bangladesh and to locate the most effective factors which can help the investors before taking rightful investment decision. The study also finds the price behavior of IPO of DSE(Dhaka Stock Exchange) in Bangladesh during Jan 2011 to July 2017. In Bangladesh, IPO has a dual listing characteristic in both DSE and CSE(Chittagong Stock Exchange). Thus, the study will be interesting to know about the IPO underpricing as well as price behavior of initial offerings.

2.0 LITERATURE REVIEW :

Initial public offering(IPO) is the recent most researched issues in the area of “finance. Many evidence documented that the IPOs’ tendency provides an abnormal returns to investors who purchased at initial offering. Evidence also documented that the US market mostly faced an abnormal initial returns. In Asia and Latin America, the underpricing tendency in IPO had been particularly diffusive.

The levels of underpricing in initial public offerings (IPOs) and its determinants of Dhaka Stock Exchange (DSE) as well as key trends in the levels of underpricing and overpricing are pointed out on a year to year and industry to industry basis through multiple regression model (Islam *et al.*, 2010). Author took underpricing/overpricing, age of the firm, size of the firm, size of the offer, timing of the offer and types of industry as a variable to determine the level of underpricing at initial public offering. The study found out the price behavior of IPOs of the Dhaka Stock Exchange(DSE) through various predictors during the period of 1995-2005. The study found that the level of underpricing in Bangladesh is comparatively high rather than that of other Asian and advanced stock market. The IPO performance is examined by Younesi, Ardekani and Hashemijoo (2012) in Malaysian IPO’s during year 2007 to 2010 and also strived to decode if there any correlation existed between return and its determinants. The author applied correlation analysis method to conduct this study and found that underpricing existed in the first day of trading during particular period, but the degree of under-pricing was dramatically decreased in comparison with that was shown in previous studies and Malaysian IPOs followed anarchy when their performances were not predictable by return determinants for the period from 2007 to 2010. The study took age of the firm, size of firms, total shares offered, shares offered price

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and Kuala Lumpur Composite Index as variables. The analysis result between Age of firms, Size of firms, Total unit offered, Offering price and KLCI index movement and IPO initial return have no significant relationship.

Beatty and Ritter (1986) argue that expected underpricing is an increasing function of uncertainty. IPO underpricing of a better-known firm is lower. A large firm is usually better known than a smaller one. So, firm size can be an effective matter for the underpricing situations.

Welch, Teoh and Wong(1998), studied that positive accruals could report earnings to the issuers of initial public offerings(IPOs) in excess of cash flows and main variables were discretionary current accruals(DCA), INDC, IDLA, INDLA. The author used Panel regression model as a method for finding the higher discretionary accruals in the IPO which had poorer stock return performance to the issuers. The studied mainly found that discretionary current accruals were under the control of management and proxy which are high around the IPO relative to the non-issuers. Bansal and Khanna (2012), conducted research in India at Bombay stock exchange during April 2000 to December 2011. Multiple linear regressions were used to differentiate between the relationship with several independent variables and dependent variable i.e. independent variables were firm's age, issue size, market capitalization, offer timing, subscription rate, number of shares offered, ownership structure, private firms(dummy variable), IPO year(dummy variable), pricing mechanism(dummy variable) and dependent variable was level of underpricing. The study found that Investors should not hold new issues very long as the highest component of the initial returns was found on the first day of trading and that the average original returns turn negative on the fourth day of trading.

Popescu and Zhaojin(2011), studied that initial public offering(IPO) liquidity improved through the co-managers "information" services by taking a sample of IPOs from the beginning of 1993 to the end of 2005. The author conducted the research through descriptive statistics and panel regression model. The paper found a high number of co-managers in the syndicate were involved in a lower spread, lower adverse selection costs, and a lower probability of informed trading. Ritter and Welch (2002) argued that asymmetric information is not the primary driver of many IPO phenomena and no rational and agency conflict explanation could be helpful for this.

Kayani and Amjad (2011), examined the relationship between initial underpricing and investor interest before and after the IPO date in the Pakistan capital market and also assessed the trading volume in the Pakistan Secondary market. Regression analysis method was used to find the aforementioned relationship. Finally, the author found that initial

underpricing is positively related to firm size, float, ex-uncertainty, and market volatility and offer size is negatively related with initial returns.

The degree of under pricing in initial public offering in Bangladesh both initial returns(IR) and market adjusted initial return(MAIR) by using multiple regression model and functional model (Khan and Chowdhury, 2017). The study found that issue price, oversubscription, market return and size of the firm had impact on underpricing and they had also a significant relationship with market adjusted initial return in Bangladesh.

Islam, Malik andUddin(2011), conducted a study to describe the price performance of IPO according to terms i.e. both long run and short run and documented that there was outperformance in short run as well as underperformance in long run of IPOs in the secondary market of Bangladesh. Major variables were size of IPO issue, initial return and sponsor capital. Descriptive model was used to analyze those major variables. The author tried to find the degree of performance in both long run and short run. There was much higher underperformance for IPOs issued in some year, the industry and market significantly outperformed which IPOs were belonging to bank and non-bank financial institutions.

The behavior of IPO underpricing in Bangladesh was analyzed by Thakur (2015) through descriptive statistics and regression analysis model by introducing some new variables such as transaction size multiple(TSM), matching firm effect(MFE), deliberate underpricing from the average uniformed value of IPO(DelUP), the natural logarithm of investor sentiment factors(LnISenti) and the IPO initial return. The author found the existence of abnormal return in market, the relative size of issue and the deliberate underpricing by issuers could explain as well as contribute to abnormal initial returns on IPOs.

Zheng and Stangeland (2007) took adjusted actual growth rate in sales, EBITDA, earnings, IPO underpricing, retention ratio, the log of market value, sustainable growth rate, the intensity of RandD relative to sales, high-tech industry(dummy) as variables to conduct research on the relationship between the IPO underpricing which related to post IPO growth in sales and EBITDA. The author used the regression model as a method to analyze the relationship and found there was a positive relationship with IPO underpricing related to growth in sales and EBITDA.

Asymmetric information, premarket book-building process and the management's stakes in the offering were important to IPO underpricing and also affected the level of underpricing.Mutual IPOs appeared more underpriced than stock insurance IPOs, but

this difference was related to the differences in pre-issue managerial ownership (Wang and Ligon, 2009).

Kutsuna, Smith and Smith(2009) studied that the price formation process of JASDAQ IPOs is more transparent than in the United States. The methods used in this study were descriptive statistics, correlation analysis and also panel data regression model and found that under adjustment of offer prices was substantially reserved in the aftermarket.

Islam(1999) analyzed the behavior of IPO underpricing in Bangladesh in his research paper. To show the relationship between dependent and independent variables [i.e. Transaction size multiple(TSM), Matching firm effect(MFE), Deliberate underpricing from the average uniformed value of IPO(DelUP), The natural logarithm of investor sentiment factors (LnISenti) and The IPO initial return] author employed regression Analysis and descriptive Statistics as analyzing tool. There was an existence of abnormal return in the market, the relative size of the issue and the deliberate underpricing by issuers are implied an abnormal initial returns on IPO.

Singh and Kumar (2008) analyzed short and long run underpricing of IPOs in the Indian Capital markets by looking at different factors affecting them. The study proposed a model of underpricing taking oversubscription variables along with age and issue size. They have performed industry wise analysis from the time period of Jan. 2006 to Oct.2006 by taking 116 IPOs. The study showed that Indian Capital markets were found to follow industry specificwaves. The sectors which were performing well were more underpriced in short run as well as perform well in long run.

3.0 METHODOLOGY :

This study will conduct to find the determinants of underpricing of IPO in Bangladesh capital market through examining new companies which were listed in DSE for the period Jan 2011 to July 2017. This study tries to examine the various factors which can determine the underpricing in Bangladesh capital market. Among those factors age of the firm, size of the firm, timing of offer, floated share, subscription ratio, premium have been considered in this research. All data that will be used are secondary data and these data are collected from: DSE, CSE and SEC website, Prospectus, DSE library and Annual Reports of the listed companies. The research has been conducted on 75 newly listed companies, taken from 93 companies which were listed on DSE over the period of 2011 to 2017.

Table 1
Selected IPOs for the Study

Year	No. of Total IPOs Issued		No. of Selected IPOs
	Fixed Pricing Method	Book Building Method	
2011	12	2	7
2012	14	0	10
2013	17	0	15
2014	17	0	17
2015	12	2	13
2016	10	1	9
2017	6	0	4
Total	88	5	75
Total IPO issued		93	

Note: Among 93 companies 18 companies will not be considered due to lack of information that required in this analysis.

3.1 METHOD :

To reach the goal of the study, all secondary data used that were available in website for the period from Jan 2011 to July 2017 are included in the sample. The sample of the study comprises 75 companies from the study period and mutual fund IPOs are ignored in the study.

Based on data, the relationship between underpricing of IPOs, age of the firm, size of the firm, timing of offer, floated share, subscription and premium are analyzed by cross-section analysis. To test the relationship between underpricing and the different factors related to price, first considers mean underpricing through descriptive analysis and then analyzed underpricing/overpricing through regression model. To detect the model six predictors are employed in this study. The study considers Multiple Regression Model to show the relationship between underpricing and different factors that indicates the level of underpricing/overpricing in IPOs.

The proposed hypotheses are following as-

H₁: IPOs listed in DSE are underpriced.

H₂: There is a positive relationship between age of firm and degree of underpricing.

- H₃:** The larger the size of firm, the lower the underpricing.
H₄: There is a relationship between timing of offer and degree of underpricing.
H₅: There is a positive relationship between floated shares and underpricing.
H₆: There is a positive relationship between subscription rate and degree of underpricing.
H₇: There is a positive relationship between premium and the degree of underpricing.

3.2 MODEL :

$$UND = \alpha + \beta_1 AOF + \beta_2 SOF + \beta_3 TOF + \beta_4 FS + \beta_5 SR + \beta_6 PRE + \varepsilon$$

Where, *UND* is the Under pricing/Overpricing which is determined by the difference of the closing price at the specific date with the offering price and divided by the offer price. This underpricing is actually indicates initial return of the stocks.

$$R_{j,t} = [P_{j,t} - P_{j,0}] / P_{j,0}$$

AOF is the age of the firm which determines the Number of years has taken from the date of incorporation to the date of IPO. Size of the firm (*SOF*) is the Total Asset (TA) of the company at the time of issuance and then taking log transmission of the variable.

$$SOF = LOG(TA) \quad TOF$$

Timing of the offer () is the difference between the date of listing and the date of offering (Singh and Mittal, 2003 and Taufil, 2007). The floated share (*FS*) is calculated by the number of share issued in the IPO divided by total number of shares of the company after IPO. *SR* is the subscription ratio which is calculated by the number of shares demand divided by the number of issued shares. Premium (*PRE*) is the difference between offer price and face value. Premium has an effect on the price of initial offerings so the study considers this variable (Khan & Chowdhury, 2017). ε is the error term of the model.

4.0 RESULT AND INTERPRETATION :

The sample data is considered newly listed companies in DSE between the period of 2011 to 2017. Table 2 identifies the degree of underpricing for every single period as well as the whole period from 2011 to 2017. The highest degree of underpricing is provided in the year 2017 (mean 454.3% with the standard deviation 457.8% and the maximum to minimum range is 1108.0% to 108.0%) and the lowest degree of underpricing was apparent in the year 2015 (mean 162.15 with the standard deviation 125.8% and the maximum to minimum range is 384.0% to 2.0%). For the whole study period, the average level of underpricing has been documented 234.1% with the standard deviation 261.9% which

ranges from -5.0% to 1531.0%. The maximum degree of underpricing indicated 1531.0% in the year 2012 and the minimum level of underpricing was -0.5% in year 2012 (overpricing).

Table 2
IPO Underpricing for Individual Year from 2011-2017

Year	NO. of IPOs	Mean	Std. Deviation	Minimum	Maximum
2011	7	215.5%	274.1%	213.0%	274.1%
2012	10	230.2%	468.4%	-0.5%	1531.0%
2013	15	234.4%	192.1%	2.5%	721.0%
2014	17	274.5%	221.8%	132.0%	673.0%
2015	13	162.1%	125.8%	2.0%	384.0%
2016	9	182.1%	163.4%	-5.0%	501.0%
2017	4	454.3%	457.8%	108.0%	1108.0%
Total	75	234.1%	261.9%	-5.0%	1531.0%

Source : Authors' calculation

4.1 UNDERPRICING/OVERPRICING STATUS :

This section represents the level of underpricing and overpricing in the Dhaka Stock Exchange. Table 3 showing the overall level of underpricing at Dhaka Stock Exchange was 243.95% with the standard deviation 262.79% and the level of overpricing was 1.97% with the standard deviation 2.62%. There were 72(96%) IPOs underpriced and only 3(4%) IPOs overpriced.

Table 3
IPO Underpricing/Overpricing during 2011(Jan) to 2017(July)

	No. of Companies	Mean level of Underpricing	Standard Deviation	Minimum	Maximum
Underpricing	72	243.95%	262.79%	2.0%	1531.0%
Overpricing	3	1.97%	2.62%	-5.0%	0.00%
Total	75	234.1%	261.9%	5.0%	1531.0%

Source : Authors calculations

The maximum level of underpricing was 1531.0% at the DSE and the minimum level of underpricing was 2.0%. The maximum level of overpricing was 0.00% and the minimum level of overpricing was -5.0%.

4.2 REGRESSION ANALYSIS :

Multiple regression analysis was used to find out whether age of the firm, size of the firm, timing of offer, floated shares, subscription ratio and premium have any significant effect on the degree of underpricing or overpricing at Dhaka Stock exchange.

Table 4
Co-linearity Statistics

Independent Variable	Tolerance	VIF
Age of the firm (AOF)	0.844	1.185
Size of the firm(SOF)	0.547	1.763
Timing of offer(TOF)	0.887	1.127
Floated share (FS)	0.694	1.441
Subscription ratio (SR)	0.512	1.954
Premium (PRE)	0.535	1.870

Source : Authors calculations

Multicollinearity has been checked for every model of the study for finding the linear relation between two or more independent variables. Variance inflation factor (VIF) is used to measure the strength of the multicollinearity. Table 4 shows that VIF result is less than 10 suggested no multicollinearity problem in the independent variables. The tolerance result is near to 0 (0.1-1) indicates no multicollinearity problem in the regression model. Tolerance and VIF lies in acceptable range so there is no multicollinearity problem in this regression model.

Table 5
Determinants of POU nderpricing

Independent Variable	Beta	t-test	Pvalue
Constant	-0.124	-0.019	0.985
Age of the firm	-0.023	-0.724	0.471
Size of the firm	0.286	0.435	0.665
Timing of offer	-0.078	-2.214	0.030
Floated share	0.560	0.309	0.758

Subscription ratio	0.066	3.891	0.000
Premium	-0.030	-1.901	0.062
R		0.637	
R ²		0.407	
Adjusted R ²		0.354	
F-statistics	7.732		0.000
Durbin-Watson	1.858		

Source : Authors calculation

Note : Underpricing is measured through Initial Returns of initial public offerings (IPOs) which is indicated as .

Table 5 represents the regression analysis results, age of the firm found to be insignificant with a negative beta at 5% level of significance ($P = 0.471$) that indicates a negative relationship between age of the firm and the degree of underpricing at DSE during the study period. Therefore hypothesis 2 is not substantiated. Size of the firm is found to be insignificant at 5% level of significance ($P = 0.665$) that indicates there is a positive relationship between size of the firm and degree of underpricing. Therefore, hypothesis 3 is also not substantiated. The floated shares ($P = 0.758$) and premium ($P = 0.062$) is also found to be insignificant at 5% level of significance. This indicates that there is a negative relationship between floated shares and the degree of underpricing and same effect on premium. Therefore, hypothesis 5 and 7 are not substantiated. Timing of the offer is found to be significant at 5% level of significance ($P = 0.030$) with a negative beta. This indicates that there is a positive relationship between timing of offer and the degree of underpricing as well as implies that when the timing of offer increases the degree of underpricing also increases. Subscription ratio has also found to be significant at 5% level of significance ($P = 0.000^a$) with a positive beta. This indicates that the higher the subscription ratio the higher the degree of IPO underpricing, consistent with the study of Chahine (2007), Sohail and Raheman (2009). Therefore, the hypothesis 4 and 6 are substantiated.

The R Square is 40.7% which implies that the independent variables (age of the firm, size of the firm, timing of offer, floated shares, subscription ratio and premium) can explain 40.7 % variations of the degree of underpricing at Dhaka Stock Exchange. This indicates that there are some other factors that may explain 59.3% variations of the degree of underpricing at Dhaka Stock Exchange. The adjusted R Square is 35.4% which is lower than R Square(40.7%) that implies the good fitness of the model. The F value is 7.732 found to be significant at 5% level of significance (Sig. $t = 0.000^a$). This indicates the regression model is significant with the dependent variable and independent variables. The Durbin

Watson also lies in the acceptable range ($DW = 1.858$). If DW is less than 2 that indicates there is no auto correlation or serial correlation in the data. This study has no auto correlation problem in data.

5. CONCLUSION :

This study examines the degree of underpricing and factors influencing the underpricing of initial public offering (IPOs). Out of 93 initial public offerings, 75 IPOs have been selected from 2011 to 2017 for the study.

The results concluded that IPOs are underpriced at DSE in Bangladesh capital market during the study period. Hoque and Musa (2002) find that during the period between 1994 and 2001, the IPOs of DSE was largely underpriced at 285.21 percent. At the same period the degree of underpricing in Malaysia was 46.44% (Yeap, 2006), Singapore and Turkey were 31.4% and 13.6% respectively (Tim et al., 2000), India was 96.56% (Singh & B, 2003) and in US market was 22% (Lowry et al., 2006). The study concludes that the highest degree of underpricing has been observed in year 2017 when market was in the bullish trend. And the minimum level of underpricing is observed in year 2015 when the market was in the bearish trend. The average under pricing is 234.1% for the period 2011 to 2017. Out of 75 companies 72 companies are underpriced and 3 companies are overpriced.

The study considers six predictors to examine the effect of those predictors on the underpricing of initial offerings. The predictors are age of the firm (AOF), size of the firm (SOF), timing of offer (TOF), floated shares (FS), subscription ratio (SR) and premium (PRE). The study finds that subscription ratio and timing of offer have significant effect on underpricing of IPO in DSE. Other predictors are age of the firm, size of the firm, floated shares and Premium have found no significant effect on underpricing of IPO. From this study it can be conclude that subscription ratio and timing of offer has positive impact on underpricing of initial public offering in Bangladesh Capital market.

This study does not address the deviations in the market environment, investor behavior, macroeconomic phenomena, shifting and implementation of Government and regulatory framework, sector of the company while formulating the model.

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