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Underpricing of IPOs: The Case of Bangladesh

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Over the years, numerous empirical studies have been carried out and theoretical literature written to enhance people's knowledge towards IPO, IPO underpricing, IPO flipping, IPO short profit, IPO long run underperformances; yet it is arduous for people to clearly understand the various issues related to IPOs especially with different types of equities in different industries and in different markets. This study analyzes the levels of underpricing in initial public offerings (IPOs) and its determinants of Dhaka Stock Exchange (DSE). Key trends in the levels of underpricing and overpricing are highlighted out on a year to year and industry to industry basis. Out of the 117 companies that were listed in the years 1995 to 2005, 102 (87.18%) IPOs were found to be underpriced, 13 (11.11%) overpriced while only 2 were accurately priced. The overall level of overpricing was 15.37% with a standard deviation of 18.89. Regression Analysis shows that offer size and size of the company is positively related to the degree of underpricing. The industry type is found to be negatively related to the degree of underpricing. However age of the firm and timing of offer were found to have no significant influence on the degree of underpricing of IPOs in the Dhaka Stock Exchange.

Keywords: Initial public offering, Underpricing, Determinants of underpricing, and Dhaka Stock Exchange.

1.0 Introduction

Initial public offering underpricing, or high IPO return is a phenomenon common to most stock markets, regardless of whether these markets are in developed or emerging economies (Ritter, et al. 1984). A common perception is that underpricing of IPOs is a contradiction to market efficiency and may hurt emerging firms trying to raise capital for expansion. This perception has spawned an extensive literature attempting to explain this apparent financial anomaly. A number of IPOs underpricing have been put forth and tested against the data of various stock markets. According to Ritter (1984), IPO underpricing occurs depending on the period a firm chooses to go public. Rock's model of "underpricing" as an expected equilibrium results are supported by Beaty and Ritter (1986), who in turn, proposed that underpricing is related to *ex ante* uncertainty. As a follow up to IPOs underpricing,

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McDonald and Fisher (1972), Reilly (1978), Dawson (1987), Yong O. (1996), Haque and Musa (2002), Lowry et al., (2006), and Taufil Mohd K. N. (2007) maintained that there are significant returns to the investors in the short run. Although numerous empirical studies have been carried out and theoretical literature written to enhance people's knowledge towards these issues; yet it is arduous for people to clearly understand the various issues related to IPOs especially with different types of equities in different industries and in different markets. Previous studies indicated that underpricing occurs across a number of different times and samples (McGuiness, 1992). The degree of underpricing varies from one issue to another. 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 M. (2006), Taufil Mohd K. N. (2007) indicate significant returns received by investors at the time of initial listing. Studies on Bangladesh new stock offers by Sadequl Islam (1999), and Haque and Musa (2002) indicate existence of higher degree of underpricing. At the same period the degree of underpricing in Malaysia was 46.44% (Yeap, M. 2006), Singapore and Turkey were 31.4% and 13.6% respectively (Laughran et al., 2000) and in US market was 22% (Lowry et al., 2006).

The purpose of this study is to investigate the price behavior of initial public offerings of the Dhaka Stock Exchange during the period of 1995-2005. This study is important so as to educate people about the DSE, particularly about the various issues about going public, the extent of IPO underpricing/overpricing in different sectors and its determinants. This study will provide an insight for the future investors regarding the types of IPOs that is best to invest in as in depth analysis of the issue of underpricing and the stock price behavior shall be explored. Different levels of underpricing observed in different countries show that there might be some unique features in each country and these features might affect underpricing. Institutional differences in pricing and allocation of shares play an important role in explaining the degree of underpricing (Loughran et al., 1994). Bangladesh capital market is unique with an interesting characteristic which IPOs are allowed for dual listing. It is found that 95% IPOs that are listed with CSE are also listed at DSE. Therefore it will be interesting to find out the extent of underpricing and what are the factors that affect underpricing in Bangladesh capital market.

The remainder of this paper is organized as follows. Section II describes an overview of Bangladesh Capital Market. Section III documents literature review related to underpricing. Section IV discusses the data and methodology. Section V presents the empirical results. The paper ends with a brief summary of conclusions.

2.0 Bangladesh Capital Market – An Overview

Bangladesh capital market is quite small compared to both other regional markets and to the size of its economy. Though generally a capital market has two prongs, the stock market and the debt market, Bangladesh market has only stock market in active operation, as a debt market is still in its incipient stage. However, the stock market is also considerably small thanks to a conducive regulatory regime, lack of incentives and local business ethos. Among over 40,000 small and medium companies only 310 have become listed till April 30, 2007, of which 33 have been de-listed in the past 15 years. Though the governments tried their best to attract the growing private companies to turn their enterprises into public limited and get listed to reap benefits and avail incentives offered time to time, on average only 10 companies have joined the market each year.

Table 1: Market capital as percentage of GDP (As of December 2006)

Sl	*Country*	*GDP Size*	*Market Capital of the listed stocks*	*Market Capital as Percentage of GDP*
01.	South Korea	$886.00b	$824.00b	93.0%
02.	India	$750.00b	$810.00	108.0%
03.	Indonesia	$353.00b	$134.00b	38.0%
04.	Iran	$182.00b	$38.30b	21.0%
05.	Malaysia	$150.00b	$160.00b	106.67%
06.	Pakistan	$127.00b	$48.00b	41.0%
07.	Philippines	$117.00b	$73.70b	63.0%
08.	Bangladesh	$62.02b	$8.47b	15.0%
09.	Vietnam	$61.00b	$14.00b	23.0%

Source: www.devdata.worldbank.org

Though industrialization has picked pace in Bangladesh almost three decades back, capital market has failed to attract the entrepreneurs as the key source of capital, which has usually been occupied by the banking system since beginning. That is why Bangladesh capital market has the lowest market capital as percentage of GDP in the region as well as other similar sized economies, as the following table shows, while its neighbouring country India, sharing almost the same industrial history, has the highest. Bangladesh has two Stock Exchanges, Dhaka Stock Exchange (DSE), established in 1954 where trading is conducted by Computerized Automated Trading System and Chittagong Stock Exchange (CSE), established in 1995 which is also conducted by Computerized Automated Trading System . All exchanges are self-regulated, private sector entities which must have their operating rules approved by the Securities and Exchange Commission (SEC). As of 31 December 2006 the total issued capital of all listed securities of Dhaka Stock Exchange was TK 71,745 million (US$1037 million) where as in Chittagong Stock Exchange the total issued capital was TK 68,554.72 million (US$979.35 million). Total market capitalization of all securities listed with the Dhaka Stock Exchange was TK 3,23,368 million (US$4673 million) as on 31 December 2006 compared to TK 2,67,480 million (US$3821.14 million) in the Chittagong Stock Exchange.

3.0 Literature Review

Initial public offerings (IPOs) are rapidly becoming one of the most thoroughly researched topics in empirical finance. Early research related to initial public offerings (IPOs) documented the tendency of IPOs to provide abnormal returns to investors who purchased them at the initial offering (Stoll & Curly, 1970). Refinements and extensions followed, including efforts to explain the variation in abnormal returns across firms and underwriters (Miller and Really, 1987). Information asymmetry, legal liability, and signaling theories have also been incorporated into IPO related research (Allen and Fauhaber, 1989; Baron, 1982; Rock, 1982; Tinic, 1988). The theory of efficient markets suggests that the price of the newly issued stock will quickly adjust to reflect the available set of relevant information (Fama, 1970). Basically, a firm enters the IPO market with two principal reasons (Rock, 1986). First, the founders of the firm may want to diversify their portfolios. The second reason is that the firm has no alternative source of funds to finance its investment project. Pagano, et al., (1998) documented that a firm enters the IPO market for various reasons, including overcoming borrowing constraints, greater bargaining power with banks, liquidity and portfolio diversification, monitoring investor recognition, change of controls and windows of opportunity.

The price formation process for IPOs may be susceptible to the existence of significant conditional price trends in the short-run aftermarket for several reasons: first, there exists a growing body of literature noting that market reaction to the signals or news announcements issued by seasoned firms is not completed immediately (Agrawal, Jaffe, and Mandelkar,1992). Instead, market prices adjust slowly to such news or signals, with trends extending over several months. IPOs are characterized by a great deal of uncertainty about their true value because of the scarcity of public information at the time of the initial offering. In such a noisy environment, judging the true value of a new issue is extremely difficult. Consequently, the initial return on an IPO (i.e., the difference between the first market price and the offer price) reveals significant information because it provides the first public indication that the market's average assessment of the IPO differs from that of the underwriter and the issuing firm. In addition, under the signaling theories (Allen and Faulhaber, 1989; Grinblatt and Hwang,1989; and Welch,1989) the initial market price provides a signal of the quality of the IPO. Second, the first market price may fail to reflect fully all available information because of the potentially fragmented market for IPOs. The issue size of IPOs is typically small and the underwriters, often facing excess demand, ration new issues to their regular clients, who constitute a small subset of potential investors. Initial trading in the aftermarket serves to disseminate information about the value of IPOs to other investors. While initial upward price movement of underpriced IPOs spreads favorable information, the available supply of shares is restricted because underwriters typically discourage initial subscribers from selling their allotments in the aftermarket. Investors who were unable to obtain their full subscriptions at the offering may seek to buy shares in the aftermarket, resulting in a sequence of daily positive returns. In the case of an overpriced issue, the first market price fails to reflect the available information because of price stabilization by the underwriting syndicate. As the syndicates disband at varying times for the different IPOs, this leads to a gradual downward price adjustment on the average and sequential negative daily average cross-sectional returns over the short-run for overpriced IPOs. Such effects, however, may be offset by incentives provided by the syndicate to induce informed traders to reveal their private information while the offering price is being set. For example, in Benveniste and Spindt (1989) informed traders have an incentive to understate their interest in a new issue in the premarket, but underpricing induces them to be truthful in their indications of interest. Nevertheless, the existence of price stabilization and rationing of new issues by underwriters and of informational fragmented markets for IPOs, may lead to conditional price trends in the short-run aftermarket for IPOs.

3.1 Evidence from major Stock Exchanges

Reilly (1978) made an update on his previous study using data from the period 1972 to 1975. The results showed that on average, new issues provided higher returns within the first week of the issue, but mixed results within a year. A summary of average initial returns on IPOs across the major stock markets is shown in Table 2 as follows.

Table 2: Average initial returns in Major Stock Markets

Country	Researcher	Sample Size	Time Period	Average Initial Return
Australia	Lee, Taylor and Walter; Woo	381	1976 - 1995	12.1%
Austria	Aussenegg	76	1984 - 1999	6.5%
Belgium	Rogiers, Manigard and Ooghe	28	1984 - 1990	10.1%
Brazil	Aggarwal, Leal and Hernandex; Maturana	62	1979 - 1990	78.5%
Canada	Job and Riding; Jog and Srivastava	258	1971 - 1992	5.4%
Chile	Aggarwal, Leal and Hernandex; Maturana	55	1982 - 1997	8.8%
Denmark	Jakobsen and Sorenson	117	1984 - 1998	6.4%
Finland	Keloharju	85	1984 - 1992	9.6%
France	Husson and Jacquillat; Leleux and Muzyka; Pallard and Belletante	187	1983 - 1992	4.2%
Germany	Ljungqvist	407	1978 - 1999	27.7%
Greece	Kazantzis and Levis	79	1987 - 1991	48.5%
Israel	Kandel, Sarig and Wohl	28	1993 - 1994	4.5%
Italy	Cherubini and Ratti; Giudici and Paleari	135	1985 - 1998	20.3%
Mexico	Aggarwal, Leal and Hernandex	37	1987 - 1990	33%
Netherlands	Wessels; Jenkinson	143	1982 - 1999	10.2%
New Zealand	Vos and Cheung; Camp	201	1979 - 1999	23%
Nigeria	Ikoku	63	1989 - 1993	19.1%
Norway	Emilsen, Paderson and Saettern	68	1984 - 1996	12.5%
Poland	Aussenegg	149	1991 -1998	35.6%
Portugal	Alpalhao	62	1986 - 1987	54.4%
Spain	Rahnema and Fernandex	71	1985 - 1990	35%
Sweeden	Rydqvist	251	1980 -1994	34.1%
Switzerland	Kunz and Aggarwal	42	1983 - 1989	35.8%

Source: Loughran et al (2000)

3.2 Evidence from Asian Stock Exchanges

The IPO behavior and after market performance have been examined by few researchers in Bangladesh context. The focus of these studies were primarily the underpricing and initial returns of IPOs, IPO flipping, market efficiency and effect of capital structures on the returns. Md. Sadequl Islam (1999) documented that the average initial returns is 116.01 percent with a standard deviation of 261.94 percent during the period between 1994-1999. Hoque and Musa (2002) find that during the period between 1994 and 2001, the IPOs of DSE was largely underpriced (285.21%). IPO underpricing - the phenomenon of a large positive gain to a new issue (relative to its offering price) immediately - after listing has been found in many markets. The magnitude of underpricing in China is even more phenomenal. Mok and Hui (1998) found that the underpricing A shares in Shanghai is 289%. Su and Fleisher (1999) showed that the underpricing could exceed 948% if IPOs from earlier years were included in the sample. The underpricing in China is mainly driven by the intuitional setups in China, of which the price of IPO shares is substantially below their non-IPO counterparts, based on the firm's fundamentals such as the price/ earning (P/E) ratios and the book/ market (B/M) ratios. Thus, this has showed that the cross-sectional variations of abnormal returns can be explained by some institutional characteristics, including the percentage of equity retained by the state and legal entities, the time lag between the offering and listing an the stage of development of the province from which the IPO firm comes, which is proxied by the number of stock investors in the province. A summary of average initial returns on IPOs across the major stock markets is shown in Table 3 as follows.

Table 3: Average initial returns in Asian Stock Markets

Country	Researcher	Sample Size	Time Period	Average Initial Return
Bangladesh	Mohammad Sadequl Islam	95	1994 - 1999	116.01%
	Hoque and Musa	113	1994 - 2001	285.21%
China	Datar and Mao	226	1990 - 1996	388 %
	Chan et al	701	1992-1997	145%
Hong Kong	McGuiness; Chao and Wu	334	1980 - 1996	15.9%
India	Krishnamurti and Kumar	98	1992 - 1993	35.3%
	Balwilder Singh and RK Mittal	500	1992-1996	96.56%
Japan	Fukuda; Dawson and Hiraki	975	1970 - 1996	24%
Korea	Jhatt, Kim and Lim	347	1980 -1990	78.1%
Malaysia	Isa and Yong	401	1980 – 1998	104.1%
	Mellisa yeap	323	2000 - 2005	46.44%
Philippines	Sullivan and Unite	104	1987 - 1997	22.7%
Singapore	Leep, Taylor and Walter	128	1973 - 1992	31.4%
Taiwan	Lin and Sheu	241	1986 - 1995	34.6%
Thailand	Wethyavivorn and Koo-Smith	32	1988 - 1989	58.1%
Turkey	Kiymaz	138	1990 - 1996	13.6%

3.4 Reasons for underpricing

Much of the theoretical research on IPOs has focused on explaining IPO underpricing. Possible reasons for underpricing include self-interested investment bankers (Baron and Holmstr¨om (1980) and Baron (1982)), the "winner's curse" (Rock (1986)), lawsuit avoidance (Tinic, 1988), signaling (Allen and Faulhaber (1989), Grinblatt and Hwang (1989), and Welch (1989)), market incompleteness (Mauer and Senbet, 1992), bookbuilding (Benveniste and Spindt, 1989), and informational cascades (Welch, 1992). Evidence suggests also that in some countries IPO underpricing may be due to the regulatory environment (Loughran, Ritter, and Rydqvist, 1994), or because the allocation of IPO shares can be used as a bribe. Attempts were made to examine the reasons for the initial high returns of these new issues. Some theoretical work suggests that the underpricing of IPOs is associated with asymmetric information and investors' concerns that the decision to issue equity is an attempt to expropriate wealth from outsiders (Ibbotson, 1994). Empirical studies have found evidence that the underpricing for IPOs of financial institutions is related to proxies for asymmetric information. Offer size (Megginson & Weiss, 1991), age of the firm (Muscarella & Vetsuypens, 1987; Barry & Brown, 1994; Megginson & Weiss, 1991; Logue, 1973; Mc Donald & Fisher, 1972), and the volatility of the post-offer return (Ritter, 1984) have all been associated with IPO underpricing. Recently Taufil Mohd K. N. (2007) conducted empirical tests on the relationship between regulations and underpricing using 546 initial public offerings on the Kuala Lumpur Stock Exchange from 1990 to 2002. Four features of regulation are investigated in study; the length of time from price setting to listing date, the fraction of shares set aside for indigenous investors, the liberalization of the pricing method from 1996, and the mechanisms designed to protect the minority shareholders and finds that the length of time from price setting to listing date is negatively related to underpricing. Finally, it was found that the protective mechanisms lead to more underpricing for firms that went public between 1996 and November 6, 1997 or those that went public after the Asian financial crisis.

4.0 Research Methodology

This study will examine new companies, which were listed on the DSE for the period 1995-2005. Post 1995 data were chosen because the Chittagong Stock Exchange was launched in 1995. Since few studies (i.e., Hoque and Musa, 2002) were conducted with pre-1995 data. We wanted to find out whether there was any significance change in the level of underpricing after the launching of CSE. All the data used in this study will be secondary data gathered from: Prospectuses, DSE Daily Diaries, DSE, CSE and SEC websites, and Annual Report of listed Companies. The population of this study includes all listed companies in the DSE. This study includes IPO issuers in all sectors such as Financial sector that include Bank, Insurance and Investment; Manufacturing sector that include Cement, Engineering, Ceramics, Food and Allied products, Jute, Paper and Printing, Pharmaceuticals and Chemicals, Tannery Industry and Textiles. Finally Service & miscellaneous that include Fuel and Power, IT, Services and Real Estates, and Miscellaneous.

Attempts were made to examine the reasons for the initial high returns of these new issues. Empirical studies have found evidence that the underpricing for IPOs of financial institutions is related to proxies for asymmetric information. Offer size (Megginson & Weiss, 1991), age of the firm (Muscarella & Vetsuypens, 1987; Barry & Brown, 1884; Megginson & Weiss, 1991; Logue, 1973; Mc Donald & Fisher, 1972; and Balwinder Singh and RK Mittal, 2003), and the volatility of the post-offer return (Ritter, 1984) have all been associated with IPO underpricing. Recently Taufil Mohd K.N. (2007), conducted empirical tests on the relationship between regulations and underpricing using 546 initial public offerings on the Kuala Lumpur Stock Exchange from 1990 to 2002 and finds that the length of time from price setting to listing date is negatively related to underpricing. Addition to these factors, the researcher expects size of the firm (as there is no division of main board and second board in Bangladesh) and the type of industry (as there is evidence of sectoral dominance among the listed firms) to be positively related to underpricing. Therefore the following hypothesis is proposed:

H1: IPOs listed with DSE are underpriced.

H2: There is a positive relationship between age of firms and degree of Underpricing.

H3: The larger the size of offer, the lower the underpricing.

H4: There is a relationship between timing of offer and degree of underpricing.

H5: The larger the size of firm, the lower the underpricing.

H6: There is a significant difference between IPOs in different industry and degree of underpricing.

The underpricing/overpricing was measured by taking the difference of the closing price at the specific date in question with the offering price and divided by the offer price as shown below:

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

Where $R_{j,t}$ is the return of stock j in the period t, $P_{j,t}$ is the price of stock j at the period t, and $P_{j,0}$ is the offer price of stock j. Returns was measured with $P_{j,0}$ using the opening price to determine the return for investors who were unable to buy the stock when it was offered but bought it on the opening day.

Multiple regression was employed to find out factors that significantly affect underpricing at Bangladesh capital market. The model is described below:

$UND = \alpha_0 + \alpha_1 AOF + \alpha_2 SOF + \alpha_3 SOFF + \alpha_4\ TIME + \alpha_5 TYPE + \varepsilon$

Where
UND = Underpricing/Overpricing, AOF = Age of the firm, SOF = Size of the firm, SOFF = Size of the offer, TIME = Timing of the offer, and TYPE = Type of industry

Age of the firm was computed from the date of incorporation to the date of IPO (David, 2002). The company size was measured by using the net assets of the company in the year of IPO as done by Khurshid, Mudambi and Georgen (1999). Timing of offer was measured by Balwinder Singh and RK Mittal, (2003) and Taufil Mohd K.N. (2007)) as the time taken from the date of listing to the offer date.

5.0 Results

The sample data is consisted of companies that are listed into DSE between the periods of 1995 to 2005. Table 5 presents the sample profile of listed companies in the sample period at DSE. Table 5 shows that the highest number of companies was from the financial sector. There were 37 companies listed during this period. Financial sector includes Banks, Insurance, finance, leasing and investment companies. The next highest number of companies that were listed with DSE was from tannery and textile companies. Tannery and textile companies include textiles, spinning, leather and foot wears. There were 27 companies listed in the DSE during this period. The 3rd largest sectors were manufacturing and, food and allied products. There were 16 companies in each of these two sectors listed during the sample period into the DSE. The lowest number of companies that were listed in the DSE during the sample period was paper and printing sector. There were only four companies listed during this period.

Table 4: New Issues on an Industry to Industry Basis

Sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
Financial	06	02	01	01	04	02	02	01	05	02	11	37
Manufacturing	02	05	01	02	02	01	00	02	01	00	00	16
Food and Allied Products	01	04	04	00	01	01	04	01	00	00	00	16
Paper and Printing	00	01	00	00	01	01	01	00	00	00	00	04
Pharmaceutical and Chemicals	00	00	01	01	00	00	02	00	01	00	01	06
Tannery and Textiles	11	08	03	01	02	00	01	01	00	00	00	27
Services and Misc.	01	01	02	00	00	01	01	03	01	00	01	11
Total	**21**	**21**	**12**	**05**	**10**	**06**	**11**	**08**	**08**	**02**	**13**	**117**

There were 21 companies listed during the year 1995 and 1996 respectively. These were the highest number of listing during the sample period. The second highest contributing year in terms listing was 2005. There were 13 companies listed during this year. The lowest number of companies listed in the year 2004. There were only two companies listed in this year in the Dhaka Stock Exchange.

5.1 Level of underpricing/overpricing

This section presents the level of underpricing and overpricing in the Dhaka Stock Exchange. Table 6 presents the overall levels of IPO underpricing and overpricing at the DSE. It shows that the overall level of underpricing at the Dhaka Stock Exchange was 179.33% with a standard deviation of 433.12. There were 102 (87.18%) IPOs underpriced and only 13 (11.11%) were overpriced.

Table 5: Overall Levels of IPO Underpricing and Overpricing

	Number of companies	**Mean Level of Underpricing**	**Maximum**	**Minimum**	**Standard Deviation**
Underpricing	102	179.32	3860.00	.64	433.12
Overpricing	13	15.37	59.28	2.00	18.88
Similar Pricing	02	0.00	0.00	0.00	0.00
Total	**117**	**156.16**	**3860.00**	**.64**	**411.06**

The overall level of overpricing was 15.37% with a standard deviation of 18.89. There were only two (1.7%) IPOs where the 1st day opening prices were same as the issue price. The maximum level of underpricing was 3860% at the DSE and minimum level of underpricing was .64%. The maximum level of overpricing at DSE was 59.28% whereby the minimum level of overpricing was 2%.

5.1.1 IPO underpricing on yearly basis

The highest degree of underpricing was registered in the year 2004 (300.13% with a standard deviation of 141.22%). However there were only two companies listed in this year. The next highest level of underpricing was recorded in the year 1995 (296.33% with a standard deviation of 893.57). There were 18 companies listed with DSE in this year. The 3rd highest level of IPO underpricing at DSE was recorded in the year 1996 (267.81% with a standard deviation of 351.34). There were 20 companies listed in this year. Table 6 presents the level of underpricing at Dhaka Stock Exchange on a yearly basis.

Table 6: IPO Underpricing on a Yearly Basis

Year	Number of Companies	Mean Level of Underpricing	Standard Deviation	Maximum	Minimum
1995	18	296.33	893.57	3860.00	9.83
1996	20	267.81	351.34	1189.75	.64
1997	08	60.45	36.93	102.00	5.00
1998	04	8.07	10.53	23.73	.86
1999	09	46.69	30.82	102.25	11.50
2000	04	38.95	22.21	68.00	20.00
2001	11	175.55	384.35	1320.00	9.00
2002	06	72.75	57.99	161.00	8.00
2003	08	70.18	43.62	124.50	5.70
2004	02	300.12	141.24	400.00	300.13
2005	12	260.30	214.49	761.50	35.75
2006	09	154.34	120.58	353.50	13.50
2007	14	174.0579	125.11938	466.17	24.00

The next highest level of underpricing recorded in the year 2005 which recorded underpricing of 260.30% with a standard deviation of 214.49. The lowest number of underpricing recorded in the year 1998. The level of underpricing was 8.07% with a standard deviation of 10.53.

5.1.2 IPO underpricing on Industry basis

The highest level of underpricing recorded at the Dhaka Stock Exchange was the Food and allied products sector (348.25% with a standard deviation of 1057.17). There were thirteen companies underpriced from this sector. The next highest level of underpricing registered in the Manufacturing sector (337.66% with a standard deviation of 408.26). There were 11 companies underpriced from this sector. The lowest level of underpricing recorded in the paper and printing sector (55.33% with a standard deviation of 39.79). Tannery and textiles sector recorded the next lowest level of underpeicing (94.93% with standard deviation of 175.35). There were 23 IPOs underpriced in this sector. Table 7 presents IPO underpricing of Dhaka Stock Exchange on sector basis.

Table 7: IPO Underpricing on an Industry Basis

Industry	Number of Companies	Mean Level of Underpricing	Standard Deviation	Maximum	Minimum
Financial	36	153.05	164.65	761.50	.86
Manufacturing	11	337.66	408.27	1189.75	3.70
Food and Allied Products	13	348.25	1057.17	3860.00	8.00
Paper and Printing	04	55.33	39.79	98.33	20.00
Pharmaceutical and Chemicals	06	255.13	522.85	1320.00	5.70
Tannery and Textiles	23	94.92	175.35	804.44	.64
Services and Misc.	09	82.85	55.04	187.50	36.00
Total	**102**	**179.33**	**433.12**	**3860.00**	**.64**

The level of underpricing on industry basis at the Dhaka Stock Exchange is presented in a pie chart below.

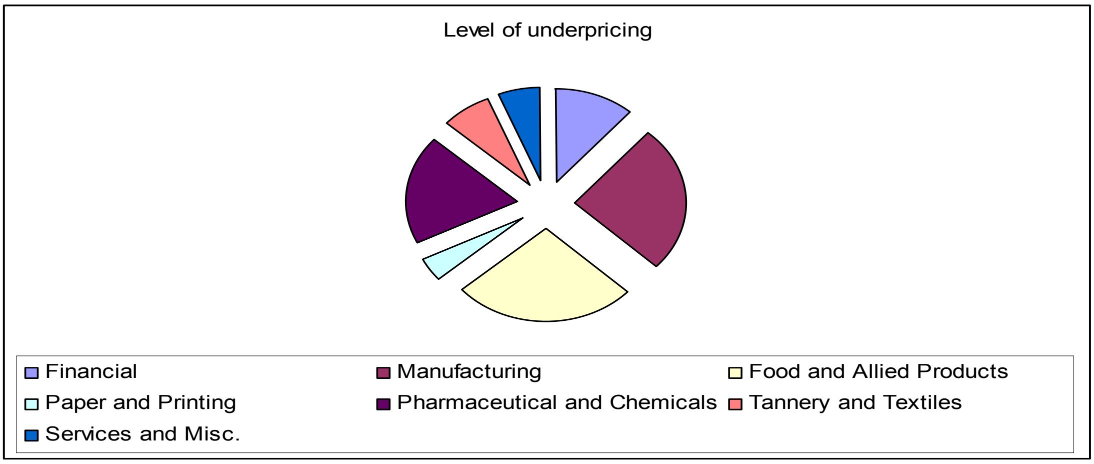

Chart 1: Level of underpricing on industry basis (DSE)

5.1.3 IPO overpricing on Industry basis

The highest level of overpricing recorded in the Services and miscellaneous sector (25.73% with a standard deviation of 32.02). There were two companies overpriced in this sector during sample period. The highest number of companies overpriced recorded in the tannery and textiles sector. There were four (14.81%) companies overpriced in this sector out of 27 listed companies. The lowest level of overpricing was recorded in the financial sector (4.25%). There was only one (2.7%) IPO overpriced out of 37 listed IPOs. Table 6.5 presents the IPO overpricing on an industry basis.

5.1.4 Determinants of Underpricing

Multiple Regression analysis was used to find out whether offer size, size of the company, years of operation before listing, timing of offer and sector have any significant effect on the degree of underpricing or overpricing at Dhaka Stock Exchange. Table 8 presents the results of regression analysis.

Table 8: Results of Regression Analysis (Determinants of Underpricing)

Factors	Beta	T-Ratio	Sig t
Years of Operations before listing	.017	.138	.890
Offer Size	.226	2.376	**.020**
Size of the company	.254	2.600	**.011**
Timing of offer	-.049	-.532	.596
Dummy_Com1	-.290	-2.673	**.009**
Dummy_Com2	-.280	-2.110	**.038**
Dummy_Com3	-.177	-1.737	.086
Dummy_Com4	-.280	-2.105	**.038**
Dummy_Com5	-.131	-1.341	.183
Dummy_Com6	-.117	-1.160	.249
R Square = 29.5% Adjusted R Square = 21.8% Durbin-Watson = 1.876 F = 3.850, Sig F = .000 Condition Index = 7.130			

Based on the regression analysis results offer size found to be significant with a positive beta at 5% significance level (sig t = .020). This indicates that offer size has significant positive effect on the degree of underpring at the Dhaka Stock Exchange. Therefore hypothesis 2 is substantiated. Size of the company is found to be significant at 5% significance level (Sig t = .011) with a positive beta. This means that size of the company positively influences the degree of underpricing at Dhaka Stock Exchange. Therefore Hypothesis 3 is accepted. Dummy variables were created for sectors that companies are listed at Dhaka Stock Exchange. Because it was a categorical variable. Six dummies were created for DSE sectors. Regression analysis results show that the sector that a company belongs to has significant effect on the degree of underpricing at 5% significance level. Therefore hypothesis 4 is substantiated. Timing of offer and years of operation before listing into the DSE were found to have no significant effect on the degree of underpricing at Dhaka Stock Exchange. Therefore hypotheses 5 and 6 were not substantiated.

The R square was 29.5%. This means that age of the firm, timing of offer, offer size, size of the company and sector that a company listed into can explain 29.5% variations of the degree of underpricing at the Dhaka Stock Exchange. This indicates that there are other factors that may explain 70.5%

variations of the degree of underpricing at the Dhaka Stock Exchange. Initially the R square was low due to the outliers. Outliers were then taken out and R square increased significantly. The Durbin-Watson falls within the acceptable range (1.876). Therefore there was no serial correlation problem in the data. The VIF (1 – 10), tolerance (0.1 – 1) and the condition index (7.130) all fell into the acceptable range. Hence there was no multicolleniarity problem in the regression model. The histogram shows that data were normally distributed. Scatter plot shows that data were not concentrated and therefore there was no homoscedasticity in the data. Normal P-P plot shows that the data were linear. The F-value was large (3.850) and found to be significant at 1% significance level (Sig F = .000). These all construct that the regression model used for the analysis was fit or in another word there was an adequate model.

6.0 Conclusion

The degree of underpricing in the Bangladesh capital market is rather high compared to that of other Asian and advanced stock markets. Islam M.S. (1999) documented that the average initial returns is 116.01 percent with a standard deviation of 261.94 percent during the period between 1994-1999. 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, M. 2006), Singapore and Turkey were 31.4% and 13.6% respectively (Laughran et al., 2000), India was 96.56% (Balwilder Singh and RK Mittal., 2003) and in US market was 22% (Lowry et al., 2006). Our findings are consistent with earlier findings of Hoque and Musa (2002) and Islam M.S. (1999). Out of the 117 companies that were listed in the years 1995 to 2005, 102 (87.18%) IPOs were found to be underpriced, 13 (11.11%) overpriced while only 2 were accurately priced. The overall level of overpricing was 15.37% with a standard deviation of 18.89. The high degree of underpricing is still persistent. In order to reduce the persistent higher degree of underpricing the Securities and Exchange Commission should review the fixed pricing system. It is recommended that Book building pricing be implemented to reduce the persistent higher degree of underpricing. Regression Analysis shows that offer size and size of the company is positively related to the degree of underpricing. The industry type is found to be negatively related to the degree of underpricing. However age of the firm and timing of offer were found to have no significant influence on the degree of underpricing of IPOs in the Dhaka Stock Exchange.

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