



Price Discovery Process for Fair Price Determination under Book Building Method: A Case Based Analysis

Tasneema Afrin

Assistant Professor
Institute of Business Administration
University of Dhaka
Dhaka, Bangladesh

AnupDatta

Assistant Manager
Power Grid Company of Bangladesh Limited
Dhaka, Bangladesh

Abstract

The major purpose of this research is to find out whether the bidding process under the book building method can successfully discover the fair price of the companies or not. Therefore, this study encompasses the book building method and the determination of cut off price through the bidding process. The study also observes the auction behaviors of the bidders both in presence and absence of an indicative price after the directive regarding the formation of the bidding recommendation committee. Book building method and the efficiency of the bidding process were analyzed when selecting the companies that went public under the book building method. 13 companies which went public under the book building method were selected through convenience sampling over a period of 2010 to 2022. Among the 13 selected companies, 3 companies went public after the new directive regarding bidding processes and formation of bidding recommendation committee, 6 companies do not have indicative price and 4 companies have indicative price. The auction data of the companies were collected from the websites of the Dhaka Stock Exchange (DSE). All other relevant information was collected from the annual report and the websites of the selected companies. The auction data of the companies include the quote price of the bidders, the volume at each price and percentage of the total volume. The data also include the indicative price of issue and the cut off price of each company. The study revealed that after formation of bidding recommendation committee and fixation of valuation techniques, bidders are well-informed about the value of the company resulting greater success in determining the fair price of the company. Also, when there is indicative price for the bidders to start the bid, the bidding process will more likely to discover the fair price of the securities of the company. It can be said that the new directive for setting the bidding process is a way out from the flaws of book building method followed in the past. Also, introduction of bidding recommendation committee has eliminated the knowledge gap between the bidders as they get a reference point to start the bid.

Key Words: Bidding process, Book building method, fair price, Indicative price, Dhaka Stock Exchange (DSE), Quote price, Cut off price, Bangladesh

Received 06 Feb., 2023; Revised 16 Feb., 2023; Accepted 18 Feb., 2023 © The author(s) 2023.
Published with open access at www.questjournals.org

I. Introduction

Joint Stock Companies follow the process of Initial Public Offering (IPO) in raising capital through issuing new shares of stock to the general public. Two methods- fixed price and book building are the mechanism to follow in raising capital of the company. According to Public Issue Rules, premium seeking companies wish to go through book building method in raising capital where eligible investors (EIs) bid to set the reference price for the general public, technically called the cut- off price. Book building method has the mechanism (systematic process) of having the reference price for the general public through using the investors'

demand for shares. These eligible investors include merchant bankers, Financial Institutions (FIs), insurance companies, asset managers, fund managers, stock dealers, mutual funds, alternative investment funds, foreign investors (having account with any security custodian registered with the commission), recognized provident funds, approved pension and gratuity funds. The process was first introduced in Bangladesh in 2010. Due to massive allegation on misuse of its process, the method was suspended following the market crash in 2011 and after about two years of suspension a modified method has been introduced in 2014. Inflated indicative price, lack of adequate knowledge of eligible investors on valuation of firms, high upward and downward limit, loopholes in the quantity quotation and selection of valuation techniques and so on were the challenges in reaping the benefits of book building method to determine the fair price of the company's stock. Though the regulatory body has gone through several amendments of the process, still the issuers have room to manipulate the process in their favor. A major directive has been issued by BSEC in Feb, 2021 in setting the bidding process and valuation methods to limit the exaggeration of the value of the firms. The regulator set three valuation methods in the directive. The first method is based on net asset, the second one on earnings per share and the third one on average of the two factors.

According to the BSEC (Public Issue) Rules 2015, determination of the cut-off price has been done by following the below steps:

- a) Eligible investors shall participate in the electronic bidding with their intended price and quantity
- b) Shall not quote for more than 2% (two percent) of the total amount offered against their respective quota
- c) Bidding shall be opened for 72 hours round the clock
- d) Bidding shall be conducted through a uniform and automated system of the exchange(s)
- e) Any information shall not be displayed or accessible during the bidding period and bidders shall deposit full bid amount in the designated bank account
- f) Up to 10% variation of the respective first bid price of the bidders can be revised and only for once during the bidding period
- g) Cut-off price will be determined at the nearest integer of the lowest bid price at which the total securities offered to eligible investors has become exhausted
- h) Securities shall be allotted in a descending order of individual bid price till exhaustion of the quota for EI category to the entitled investors. Provided that while determining the cut-off price, time stamping shall be followed if the bid quantity of shares at same price is more than the remaining quantity till exhaustion of the quota for EI
- i) The securities shall be offered to general public for subscription at an issue price of 10% (at nearest integer) discount from the cut-off price.

Till August 2022, twenty-one companies have raised capital through using book building method in Bangladesh Capital Market. To make the capital market a barometer of the economy, regulators, investment bankers, bourses etc. are working hard to bring good reputed companies in the market. In that case book building method is the only way to set the fair price for the well-established companies. Though a recent move in fixing the valuation methods and pricing system has allegation to frustrate the entrepreneurs as it follows a more conservative way of valuing the companies and setting the price. Despite some flaws, it is expected that book building method will boost the way of having reputed companies to be listed in the market as well as represent as a barometer of the economy.

II. Methodology

Thirteen DSE listed companies which went public under the book building Method over a time span of 2010 to 2022 have been selected. The auction data of the companies is collected from when the book building method was introduced to the latest IPO under the book building method. Among the 13 selected companies, 3 companies went public after the new directive regarding bidding processes and formation of bidding recommendation committee, 6 companies do not have indicative price and 4 companies have indicative price. The auction data of the companies were collected from the websites of the Dhaka Stock Exchange (DSE). All other relevant information was collected from the annual report and the websites of the selected companies. The auction data of the companies include the quote price of the bidders, the volume at each price and percentage of the total volume. The data also include the indicative price of issue and the cut off price of each company. To determine whether the bidding process can properly discover the fair price of the company, cut off price has been compared with the fair intrinsic value of the company. The cut off price is the price at which all the allocated shares for the eligible investors got exhausted. To observe whether the indicative price has any impact on the auction behavior of the company, price variation has been computed using the cut off price as the population mean, price range, average bid quantity and the average value at the cut off price. The high level of price variation from the cut off price means the bidders are more scattered while bidding as they do not have any

reference point to start the bid. With the presence of the indicative price, average bid quantity and the average value at cut off price will be higher.

III. Literature Review

Mungara (2011) studied the efficacy of price discovery through book building in Indian stock markets. They observed the IPOs in the Indian Stock market that were issued in the year of 2005 and 2006. They observed that in 2005, there were 31 IPOs in total and of them 25 IPOs were underpriced and in 2006, 27 out of 36 IPOs were underpriced. The IPOs were underpriced almost one fourth of their original price on an average in both years. There is a study comparing the book building method and fixed price method and their roles in price discovery. The study was done by Hanafi (2016). They studied the importance of book building method in IPOs in the Indian market and compare the performance of the securities both in short and long term that are issued under the book building method and fixed price method. They concluded that book building method is more crucial in price discovery of the securities than the fixed price method. Another study examines the price discovery process in IPOs and the role of underwriters by Aggerwal and Corony (2000). They observed that when the lead underwriter makes its first quote, a huge portion of the initial return of the IPOs depends on the movements in the initial five minutes. Major Price discovery occurs during the first five minutes of the opening of window. A study conducted by Biais and Crouzet (2002) examines the performance of IPOs issued through various methods. They concluded that the fixed price method failed to determine the fair price of the issue. It is observed that, issues under the fixed price method led to the inefficient pricing. They also said that Dutch auction is also unable to discover the fair price of the securities. Their study shows that book building method is helpful in discovering the fair price of the securities. Singh and Mitchell Van der Zahn (2007) studied that the book building method leads to the efficient price discovery of the issue. They studied a total of 288 IPOs which are issued under the book building method during the year from 2004 to 2010. They observed that the IPOs are underpriced in India and they conclude that the underpricing is deliberate. Over subscription of the IPOs is one of the reasons for the underpricing of the IPOs.

IV. Case Category -01: After issuing new directives for setting the bidding process under Book Building Method

4.1 Case -01: Navana Pharmaceuticals Ltd.

25% of Navanasecurities are reserved for eligible investors (EIs) and the remaining 75% securities will be offered for general public including NRB at an issue price which is 30% discounted from the cut-off price. The cut-off price of Navana Pharmaceuticals has been fixed at Tk. 34.00 per share through the bidding process and at Tk. 24.00 per share it will be offered to general public. The date of subscription has been fixed from 05 Sep 2022 to 13 Sep 2022. Now to figure out whether the bidding process became effective in discovering the fair price of the company or not, we have to look at the weighted valuation of the company.

Table-01

Method No.	Sl. Valuation Methods	Price per share	Weight	Weighted Value
Method 1	(a) Share price based on NAV per share with revaluation	43.53	0.20	8.71
	(b) Share price based on NAV per share without revaluation	19.02	0.20	3.80
Method 2	(a) Historical earnings-based value per share (Considering overall Market P/E)	40.56	.040	16.22
	(b) Historical earnings-based value per share (Considering overall pharmaceutical sector P/E)	50.71	0.20	10.14
Method 3	Average market price of similar stock-based valuation	195.42	0.00	0.00
Fair Price				38.88
Cut-off Price				34.00

As per the BSEC reference No. BSEC/CMRRCD/2021-389/04 dated February 01, 2021, the Eligible Investors (EIs) shall form a Bidding Recommendation Committee comprising of at least 02 members who have relevant technical and fundamental knowledge, skill and experience. The committee shall recommend in participating and mention the bidding quantity and price based on three mentioned valuation methods in the directive. Through this directive BSEC tried to ensure due diligence, independent professional judgment, transparency, objectivity among the EIs and recommendation committee members in the decision making for bidding. So, it is observed that after this directive there has stability among the bidders as the recommendation committee has fair knowledge regarding the valuation as well as fair price of the company. The behavioral pattern of the bidders also reflected in price variation, price range and average value in bidding which is

mentioned below. The average bid quantity and volume indicates the reflection of the implementation of the bidding recommendation committee.

Table-02

Particulars	Value
Price Variation	331
Price Range (Difference)	34-20 (14)
Average Bid Quantity	93328
Average Value	3173170
Fair Price	38.88

If we look at the weighted average value of the shares, the fair price of the company stood at Tk. 38.88 per share. As we consider the 20% deviation from the fair price of the company, it can be said that the fair price of the company is discovered considering the calculated fair price of the company. In case of this company, the issue manager couldn't provide any indicative price to the bidder due to the regulatory constraints. But the new directive regarding bidding committee recommendation and valuation techniques help to get a notion about fair price of the company. That's why we have seen a small dispersion in the bidding price from Tk. 34.00 to Tk. 20.00.

4.2Case -02: JMI Hospital Requisite Manufacturing Limited (JHRML)

This company went public through Initial Public Offering (IPO) under Book Building Method in 2022 by issuing 35,294,120 ordinary shares at face value of Tk. 10.00 per share. Out of 35,294,120 shares 25% shares are allocated to EIs and remaining 75% shares are allocated to public including NRBs. The company has seen a consistent Earnings Per Share (EPS) from June, 2016 at Tk. 2.07 per share to Tk. 2.42 per share at June, 2020. After completion of the bidding, the cut-off price of the company was fixed at Tk. 25.00 per share and was offered for general public at Tk. 20.00 per share at a 20.00% discount. Now to figure out whether the bidding process became effective in discovering the fair price of the company or not, we have to look at the weighted valuation of the company.

Table-03

Method No.	Sl. Valuation Methods	Price per share	Weight	Weighted Value
Method 1	(a) Share price based on NAV per share with revaluation	29.99	0.20	6.00
	(b) Share price based on NAV per share without revaluation	27.78	0.10	2.78
Method 2	(a) Historical earnings-based value per share (Considering overall Market P/E)	23.16	0.30	6.95
	(b) Historical earnings-based value per share (Considering overall sector P/E)	31.88	0.40	12.75
Method 3	Average market price of similar stock-based valuation	343.53	0.00	0.00
Fair Price				28.48
Cut-off Price				25.00

If we look at the weighted value of the shares of the company, the fair price of the company calculated at Tk. 28.48 per share. The cut-off price of the company determined at Tk. 25.00 per share. So, considering 20% deviation from the fair value per share of the company, it can be said that the fair price of the company is discovered through the bidding under book building method. This company also followed the new directive regarding the bidding process under book building method. In that case, bidders got the recommendation to participate in the bidding process with the mentioned price and quantity through an expert bidding committee. If we look at the data below, it can be said that there was less price variation and price range among the bidders was also low. High average bid quantity and value reflects that there is less dispersion among the bidders.

Table-04

Particulars	Value
Price Variation	95
Price Range (Difference)	25-16 (09)
Average Bid Quantity	145307
Average Value	3632678
Fair Price	28.48

4.3Case -03: Baraka Patenga Power Limited (BPPL)

BPPL was incorporated as a private limited company and subsequently converted into a public limited company. BPPL holds 51% shares of both the companies. After completion of the bidding process, the cut-off price of the company has been fixed at Tk. 32.00 per share and it was offered to public at a 10% discount to Tk. 29.00 per share. Here, cut-off price is determined at the lowest bid price in nearest integer at which the total shares offered for eligible investors became exhausted. Again, our objective is to find whether bidding process is effective enough to discover the fair price or not as well as the behavioral pattern of the bidders regarding the mentioning of indicative price by the issue manager of the company.

Table-05

Method No.	Sl. Valuation Methods	Price per share	Weight	Weighted Value
Method 1	Net Asset Value (NAV) per Share	23.00	0.40	9.2
Method 2	Earnings-based value per share	45.86	0.40	18.34
Method 3	Average market price of similar stock-based valuation	52.41	0.10	5.24
Method 4	Similar stock-based valuation (Considering P/E Multiple)	55.47	0.10	5.55
Fair Price				38.33
Cut-off Price				32.00

By looking at the weighted average value of the shares, it can be said that the value stood at Tk. 38.33 per share. As mentioned earlier, the cut-off price of the share is Tk. 32.00 each. As we considered a 20% deviation from the fair price of the company, it is evident that the bidding process was able to discover the fair price of the company. Moreover, new directive regarding the bidding process under the book building method has converted the weaknesses into strengths of the unskilled, inexperienced bidders to bid properly in line with the recommendation of the bidding committee.

Table-06

Particulars	Value
Price Variation	1977
Price Range (Difference)	32-13 (19)
Average Bid Quantity	512896
Average Value	16412660
Fair Price	38.33

From the above table, it is evident that the price variation, price range during bidding period was low compared to the other companies which do not belong to this version of bidding directives under book building method. The average bid quantity and volume are also higher which indicate that bidders were in a position to certain about the fair price of the company. Basically, when the bidders have a reference point to start or close the bid, there is low price variation and price range among the bidders. Though BPPL is not in the version of bidding process where indicative price was mentioned by the issue manager of the company, bidders got advantage of identifying fair price of the company through the recommendation of the bidding recommendation committee.

V. Case Category-02: Not Allowed to Mention Indicative Price

5.1 Case-01: Walton Hi-tech industries limited.

This company issued its securities to the public under the book building method. The eligible investors bid for the subscription of issue and the cut off price was determined through the bidding process, and they would buy the shares of the company. For the WALTONHL, the bidders started their bid at as high as Tk.765 for each share. After the bidding process, the cut off price was determined at Tk. 315 for each share. To find that whether the bidding process can discover the fair price of the shares of the company, let's have a look at the valuation report of the company prepared by the issue managers of the company. In the valuation report, issue manager uses 4 valuation methods. These are:

- 1) Net Assets Value (NAV) Method
- 2) Earning Based Value per share (market and sector P/E)
- 3) Average market price of similar shares
- 4) P/BV multiple of similar stocks

They calculated a wide range of value of the shares of the company under different valuation methods. The following table illustrates the summary of the valuation methods:

Table-07

Valuation Method	Weight	Value	Weighted Value
Net Assets Value per share with Revaluation	0.35	243.16	85.10
Net Asset Value per share without Revaluation	0.35	138.53	48.48
Earning Multiple (Sector P/E)	0.3	396.58	118.97
Fair Price			252.56
Cut-off Price			315.00

If we look at the weighted average value of the shares, the fair price of the company is Tk. 252.56 per share. Now, considering the calculated fair price of the company, it can be said that the fair price of the company is not discovered. Here, a 20% deviation from the fair price of the company has been considered.

In case of this company, the issue manager couldn't provide any indicative price to the bidder due to the regulatory constraints. So, if we look at the auction behavior of the eligible investors, a great dispersion has been observed in the bidding price. The bidders started their bids at Tk. 765 and the lowest price they bid for was Tk. 12 for each share. So, the price range for the bid is as high as 753. If we look at the price variation of the company, it is also high. The reason of this high price variation is that the bidders had no reference point to start the bid. So, they quote their bids according to their judgment and calculation.

Table-08

Particulars	Value
Price Variation	2969718
Price Range (Difference)	765-12 (753)
Average Bid Quantity	31700
Average Value	9985500
Fair Price	252.56

We also calculated the price variation of the bid by assuming the cut off price (315 in this case) as the population mean is very high. The high price range indicates the lack of reference point drives the bidders to quote at a great dispersion. The average bid quantity is low at the cut of price and the average value of the securities at the cut off price is also low. This will be high if there were any indicative price so that the bidders get the reference point to kick off the bids and presence of indicative price will make the bidders concentrated around the fair price of the shares.

5.2 Case-02: ADN Telecom Limited.

ADN Telecom Limited, a sister concern of AND Group, is a technology service provider company operating its business in the country since 2003. The company went public in 2019 to raise the capital of Tk. 19,791,667.00 by issuing 19,791,666 ordinary shares to the public. Of the total issue size, 60% or 11,875,000

ordinary shares are allocated for the eligible investors. They also follow the book building method for the IPO. So, the eligible investors had to bid for determining the cut off price to find out the price at which they will purchase the shares of the company. The cut off price was determined as Tk. 30 at with all the shares allocated for the eligible investors got exhausted. The valuation methods applied were:

- 1) Net Assets Value per share
- 2) Earning Based Value per share (market P/E)
- 3) Average market price of similar stock based valuation

The following table shows the summary of the valuation report prepared by the issue manager of the company:

Table-09

Valuation Method	Value
Net Assets Value per share	16.13
Earning Based Value per share (market P/E)	27.49
Average price of the similar stocks	33.66
Cut-off Price	30.00

The average value of the valuation methods leads to the fair price of the company and that is Tk. 25.76 each share. If we consider the 20% deviation from the fair price, then we can say that the bidding process for the company successfully discovered the fair price of the company even without any reference point for the bidders. The reason we will find if we look at the auction behavior of the company.

The auction data of ADN telecom limited shows that the bidders start their bid at price 45 where only two bidders bid for only 2.67% of the total volume of the company. The next bid occurs at the price of Tk.40, then 33 and then 31. At the price of Tk. 30 each, the 572 bidders bid for more than 1000% of the total size of the issue that is available for the eligible investors. The following table illustrates the auction behavior of the company:

Table-10

Price	Volume	%	Cumulative Volume	Cumulative Value @Bid Price	Value	Cumulative Value	Bidders	Bids
45	316,600	2.67%	316,600	14,247,000	14,247,000	14,247,000	2	2
40	1,246,700	10.50%	1,563,300	62,532,000	49,868,000	64,115,000	7	7
33	215,900	1.82%	1,779,200	58,713,600	7,124,700	71,239,700	1	1
31	459,600	3.87%	2,238,800	69,402,800	14,247,600	85,487,300	2	2
30	131,053,700	1103.61%	133,292,500	3,998,775,000	3,931,611,000	4,017,098,300	572	572

To analyze the auction behavior of the bid, let's see the following table which illustrates the price variation of the bid, price range, and average bid quantity at the cut off price and the average value at the cut off price.

Table-11

Particulars	Value
Price Variation	1219
Price Range (Difference)	45-15 (30)
Average Bid Quantity	229114.86
Average Value	6873445.80
Fair Price	25.76

I calculated the price variation using the cut off price as the population mean. Price Variation indicates how much scatter was the bids of the bidder. The more the value of this indicator, the more scattered the bids of the bidders are. Price Range also indicates the same thing. In case of Average bid quantity, if there were any

indicative price given by issue manager in the prospectus, more bidders would bid at that price and the average bid quantity and average value will be higher at the cut off price.

5.3Case-03: Runner Automobile Limited

The issue manager of the IPO was IDLC Investments Limited. The IPO raises a total of Tk. 1000 million approximately by issuing 13,930,348 ordinary shares to the general public out of which 8,333,333 ordinary shares are allotted for the eligible investors. The company went public under the book building method. After completion of the bidding, the cut off price of the company is determined at Tk. 75 for each share of the company. The applied valuation methods were:

- 1) Net Assets Value per share (With Revaluation)
- 2) Net Assets Value per share (Without Revaluation)
- 3) Earning Based Value per share
- 4) Average market price of similar stocks

Table-12

Valuation Methods	Value
Net Assets Value per share (With Revaluation)	55.70
Net Assets Value per share (Without Revaluation)	41.94
Earning Based Value per share	50.26
Average market price of similar stocks	95.65
Cut-off Price	75.00

The average of the four valuation methods gives the fair price of the Tk. 60.88. The cut off price was Tk. 75 each. Considering the 20% variation from the fair price, it can be said that the fair price of the securities is not discovered. The bidders did not have any reference point to start the bid and this could be the reason why they started the bid at Tk. 82. The bid auction data of the company gives a clearer view of the auction behavior of the bidders. They started the bid at Tk. 82 where only 1 bidder bid for 1.83% of the total amount that is available for the eligible investors. The following table represents the data of the auction behavior of the bidders:

Table-13

Price	Volume	%	Cumulative Volume	Cumulative Value @Bid Price	Value	Cumulative Value	Bidders	Bids
82	152,400	1.83%	152,400	12,496,800	12,496,800	12,496,800	1	1
80	62,500	0.75%	214,900	17,192,000	5,000,000	17,496,800	5	5
75	89,036,500	1068.44%	89,251,400	6,693,855,000	6,677,737,500	6,695,234,300	561	561

Here, it is observed that the bid started at Tk. 82 and the at the price of Tk. 75, the bidders quote 1068% of the total amount and at this price the reserve for the eligible investors got exhausted.

Table-14

Particulars	Value
Price Variation	5536
Price Range (Difference)	82-42 (40)
Average Bid Quantity	158710.33
Average Value	11903275.4
Fair Price	60.88

Price variation is calculated using the cut off price of the bid as the population mean. Without any indicative price given by the issue manager, the bidders do not have any reference point to start the bid. Indicative price or recommendation reduce the price variation and the price range of the bid. In case of average bid quantity and average value, more bidders will bid at the cut off price or around the cut off price if there were any indicative price.

5.4Case-04: Esquire Knit Composite Limited

The company issued the securities under the book building method in which the eligible investors had to bid to determine the cut off price of the issue. The eligible investors were allocated 20,833,332 ordinary shares out of total 34,895,833 ordinary shares. Through the bidding process, the cut off price of the securities was determined at Tk. 45.00 each share. The applied valuation methods were:

- 1) Net Assets Value (with and without revaluation)
- 2) Earning based value per share
- 3) Average price of the similar stocks

Table-15

Valuation Method	Value
Net Assets Value per share (With Revaluation)	45.83
Net Assets Value per share (Without Revaluation)	25.96
Earning Based Value per share	37.70
Average market price of similar stocks	39.77
Cut-off price	45.00

The average of these values that are found out according to the different valuation methods is Tk. 37.32. The cut off price of the bid is Tk. 45. If we consider the 20% variation of fair price, then the cut off price is of Tk. 45 can discover the fair price of the shares of the company. Although there was not any indicative price, the bidders successfully discover the fair price of the securities. The auction data reveals the auction behavior of the bidders. The first bidder bid at a price of Tk. 45 per share and the first bid turned out to be the cut off price as all the reserved shares for the eligible investors got exhausted. Though the bidders didn't have any indicative price to start the bid, they successfully discovered the fair price of the company. The reason that the bidder was able to discover the fair price of the shares could be that the first bidder was able to value the fair price of the company and the other bidder also followed the first bidder. That could be the reason why the cut off price was found at the first bid price. To analyze the auction behavior of the bid, I calculate the price variation, price range, average bid quantity and the average value at the cut off price. The following table shows the result.

Table-16

Particulars	Value
Price Variation	3353
Price Range (Difference)	45-16 (29)
Average Bid Quantity	384930.89
Average Value	17321890.4
Fair Price	37.32

The price variation is calculated using the cut off price as the population mean. The higher the price variation, the more scatter the quote price is. Price range also indicates the price variation. The average bid quantity will be higher if there was any indicative price because more bidders will concentrate on the indicative price and they will quote at or around the indicative price.

5.5Case-05: Aman Cotton Fibrous Limited

The IPO of this company was done under the book building method. The cut off price of ACFL was determined at Tk. 40.00 per share. Is the bidding process can discover the fair price of the securities? To answer this question, let's look at the valuation report done by the issue managers of the company for the purpose of listing into the stock market. The issue managers of the company have used five valuation methods to determine the fair price if the company. The methods they used:

- 1) Net Assets Value per share
- 2) Earning Based Value per share
- 3) Average market price of similar stocks
- 4) P/BV multiple of similar stocks based valuation
- 5) P/E multiple of similar stocks based valuation

Table-17

Valuation Method	Value
NAV per share with revaluation	35.63
NAV per share without revaluation	32.31
Earning based value per share (Sector P/E)	50.47
Earning based valuation per share (Market P/E)	54.10
Average market price of similar stocks	41.14
P/BV multiple	51.30
P/E multiple	70.18
Cut-off Price	40.00

The average of the five valuation methods gives us the fair price of each share of the company. The fair price of the company is Tk. 47.88 each and it can be said that the bidding process can discover the fair price of the share considering the 20% deviation of the cut off price from the fair price calculated by the issue managers of the company. The bid auction data will reveal the auction behavior of the bidders of the company. The first bidder starts bidding at a price of Tk. 50.00 at which 11 bidders quote their price which constitutes only 16% of the total available amount for the eligible investors. Next bid price was 44 taka and at the price of 40 taka, all the shares got exhausted and it is the cut off price of the securities. To analyze the auction behavior of the company, I calculate the price variation, price range, average bid quantity and the average value at the cut off price. The following table shows the result:

Table-18

Particulars	Value
Price Variation	5835
Price Range (Difference)	50-11 (39)
Average Bid Quantity	221341.53
Average Value	8853661.37
Fair Price	47.88

The price variation is calculated using the cut off price as the population mean. The higher the bid price variation, the more scatter the bid of the bidders. Price range also indicates the same thing. Average bid quantity and the average value will be higher at the cut off price if there were any indicative price of the shares of the so that the bidders can get a reference point to quote for their bids. Although the issue manager didn't provide any indicative price, the bidder became capable of discovering the fair price of the securities.

5.6Case-06: Bashundhara Paper Mills Limited

In case of BPML, the cut off price was determined at Tk. 80.00. This is the price at which all the 15625000 ordinary shares that was offered to the eligible investors got exhausted. But the question is "Is the fair price of the shares discovered through the bidding process?" To answer this question, there is a need for looking at the valuation report of the company. As per the prospectus of the company, the intrinsic value of the company's share is Tk. 53.05 each. The following table provides the snapshots of the company's valuation:

Table-19

P/BV multiple of similar stock based valuation	Value
(a)Net Asset Value (NAV) per share of BPML	30.49
(b) Average P/BV of Paper Sector	1.74
Fair Price (a*b)	53.05

Here it is visible that there is a big difference between the cut off price and the fair price of the company. The reason behind the difference could be there was no reference point for the bidders to start the bid. As per the public issue rules (2015), the issuers cannot determine the indicative price of an IPO. Because of the lack of indicative price, bidders follow the first bid. So, if the first bid price is far from the fair price of the company, the other bidders will take the first bid price as the reference point and bid according to the reference point. Ultimately, the cut off price will also be far from the reference point. From the auction data of BPML, we can

understand the impact of not having any indicative price. Let's look at the auction behavior of the bid. The following table gives the partial data of the auction of BPML.

Table-20

Price	Volume	%	Cumulative Volume	Cumulative Price	Value @Bid	Value	Cumulative Value	Bidders	Bids
90	555,400	3.56%	555,400	49,986,000		49,986,000	49,986,000	2	2
84	595,200	3.81%	1,150,600	96,650,400		49,996,800	99,982,800	2	2
83	301,200	1.93%	1,451,800	120,499,400		24,999,600	124,982,400	1	1
82	304,800	1.95%	1,756,600	144,041,200		24,993,600	149,976,000	1	1
81	1,414,400	9.05%	3,171,000	256,851,000		114,566,400	264,542,400	7	7
80	95,007,600	608.05%	98,178,600	7,854,288,000		7,600,608,000	7,865,150,400	366	366

Here, we can see that the bid start at the price of Tk.90 and the cut off price is determined at Tk. 80.00. We can also apply some variation tools to see that if the price is discovered without the indicative price.

Table-21

Particulars	Value
Price Variation	42810
Price Range (Difference)	90-12 (78)
Average Bid Quantity	259583.6
Average Value	20766689
Fair Price	53.05

VI. Case Category-03: Allowed to Mention Indicative Price

6.1 Case-01: ACME Laboratories Limited

The cut off price for the company was determined at 85.2 taka per share. To see whether the bidding process can discover the fair price of the company; we need to look at the valuation report of the company. The valuation report that is prepared by the issue managers of the company indicates the bidder about the fair price of the shares of the company. In the valuation report, the issue managers used four valuation methods to determine the fair price of the company. The valuation methods are:

- 1) Net Asset Value per share at current cost
- 2) Net Asset Value per share at historical cost
- 3) Earning Based Value per share
- 4) Average market price per of similar stocks

Table-22

Valuation Methods	Weight	Value	Weighted Value
Net Asset Value per share at current cost	0.125	70.37	8.80
Net Asset Value per share at historical cost	0.125	37.45	4.68
Earning Based Value per share	0.75	110.34	82.76
Fair Price			96.23
Cut-off Price			85.20
Indicative Price			71.00

The average of value of the company under the four methods is 96.23 taka per share. Remember the cut off price of the shares of the company is 85.2 taka. So, considering the 20% variation of cut off price from the fair price, the price of the shares of the company is discovered through the bidding process.

Table-23

Particulars	Value
Price Variation	1798.05
Price Range (Difference)	85.2-57 (28.2)
Average Bid Quantity	379154.8638
Average Value	32303994.4
Fair Price	96.23

As the issue managers provide the investors an indicative price, most bidders bid at and around the indicative price. So, the price variation that I calculate using the cut off price as the population mean is so small. The price range is also less compared to the other bids that did not have any indicative price. The average bid quantity and the average value at the cut of price is also centered as the bidders are sure about the indicative price and they can take decisions easily.

6.2Case-02: United Power Generations and Distributions Company Limited

From the auction data, we can see that the cut off price for the company was Tk.72.00 per share. To answer the question that whether the bidding process can discover the fair price of the company; we need to compare the cut off price and the fair price of the company. For the fair price, we need to look at the valuation report of the company prepared by the share issue managers of the company. The managers have used two valuations methods to determine the fair price of the company. The methods are:

- 1) Earning Based Value per share
- 2) Net Asset Value per share

Table-24

Valuation Method	Weight	Value	Weighted Value
Earning Based Value per share	0.75	82.25	61.69
Net Asset Value per share	0.25	23.64	5.91
Fair Price			67.60
Cut-off Price			72.00
Indicative Price			60.00

The weighted average price of the shares is 67.60 taka each. The cut off price is determined through the bidding is also Tk.72 per share. So, the bidding process can successfully discover the fair price of the shares of the company.

Table-25

Particulars	Value
Price Variation	2124.86
Price Range (Difference)	72-48 (24)
Average Bid Quantity	332238.9831
Average Value	23921206.78
Fair Price	67.60

Price variation is calculated by using the cut off price as the population mean and we can see that the price variation is lower compared to the other bids which have no indicative price for the bidders. The reason behind this is the bidders had a reference point to start the bid and they had got guidance about the possible cut off price of the shares of the company. The Price range also indicates the variation of the prices quotes by the investors and it is also comparatively lower due to the indicative price of the shares. The average bid quantity and the average value at the cut off price is concentrated at the cut off price because most of the bidders bid at the cut off price of shares.

6.3Case-03: M.I. Cement Limited

In the bidding process, the cut off price determined at Tk.111.6 per share and this is the only price quoted by the investors. To know whether the bidding process has become capable of discovering the fair price of the company, let's look at the valuation report prepared by the issue managers of the company. The issue managers have used four valuation methods to determine the fair price of the company. The methods are:

- 1) Net Asset Value per share
- 2) Earning Based Value per share
- 3) Projected Earning Based Value per share
- 4) Average market price of similar stock

Table-26

Valuation Method	Weight	Value	Weighted Value
Net Asset Value per share	0.125	15.78	1.97
Earning Based Value per share	0.125	23.47	2.93
Projected Earning Based Value per share	0.75	119.56	89.67
Fair Price			94.57
Cut-off Price			111.60
Indicative Price			93.00

The weighted average of the three valuation methods gives the fair price of the company and the price is 94.57. Considering the 20% deviation of cut off price from the fair price of the company, the bidding process can successfully discover the fair price of the company. The auction behavior of the bidders has the impact of indicative price that is mentioned in the prospectus of the company. There is only one bid price for the shares of the company. All the shares that are allocated for the eligible investors have got exhausted and thus determine the cut off price of the shares of the company.

Table-27

Particulars	Value
Price Variation	0
Price Range (Difference)	0
Average Bid Quantity	473720.85
Average Value	52867246.98
Fair Price	94.57

6.4Case-04: RAK Ceramics (Bangladesh) Limited

The face value of the shares is Tk.10. The method of IPO was book building method in which the eligible investors have to bid to subscribe the offering. In the prospectus of the company, the fair price of the shares of the company is 41.06 taka and the underwriters determine the indicative price at Tk. 40.00.

The underwriters determine the fair price of the company based on the three-valuation method:

1. Price based on average P/BV multiple of similar stock
2. Price based on average P/E multiple of similar stock
3. Price based on Dividend Discount Model (DDM)

Table-28

Particulars	Values (Tk)	Assigned Weight	Weighted Value
Price Based on the average P/BV Multiple	44.08	.650	28.65
Price Based on the average P/E Multiple	32.31	.175	5.65
Price Based on DDM	38.6	.175	6.76
Fair Price			48.00
Indicative Price			40.00

Based on the valuation report of the company, they determine the indicative price of Tk.40. As the issuer provides a reference point for the eligible investor to start the bid, the bidders will go for bidding based on the indicative price. We can see this from the auction data of the company. The first bid was at Tk.48 taka and all the shares available for the eligible investors got exhausted at that price. So, the cut off price for the company was determined at Tk. 48.00. Now if we observe the auction behavior of the eligible investors, we will see that indicative price helps the eligible investors to start the bid at a price that is not far from the fair price of the company. We will see that price variation of the auction is much lesser for the company. We also observe that the average bid quantity and the average value is higher at the cut off price.

Table-29

Particulars	Value
Price Variation	73
Price Range	48-40 (8)
Average Bid Quantity	630461.4
Average Value	30262149
Fair Price	41.06

VII. Findings

After analyzing the companies which were selected for this report, it is time to answer the question which is whether the bidding process under the book building method can successfully discover the fair price of the shares of the companies. To see this, we need to look at the cut off price and fair price of the companies. The following table summarizes the cut off price and the fair price of all the thirteen companies that I have analyzed:

Table-29

ISSUE	Sector	FAIR VALUE	Indicative Price	CUT-OFF PRICE	Variation (%)	Varian ce	PRICE RANGE	Comment
Category 01: Not Allowed to Mention Indicative Price but with Bidding Recommendation Committee								
NAVANA	Pharmaceuti cals & Chemicals	38.88	N/A	34	-12.54%	331	14	Discovered
JHRML	Miscellaneous	28.48	N/A	25	-12.21%	95	9	Discovered
BPPL	Fuel & Power	38.33	N/A	32	-16.52%	1977	19	Discovered
Category 02: Not Allowed to Mention Indicative Price								
WALTONHI L	Engineering	252.57	N/A	315	24.72%	29697 18	753	Not Discovered
ADNTEL	IT Sector	25.76	N/A	30	16.46%	1219	30	Discovered
RUNNERAU TO	Engineering	60.88	N/A	75	23.19%	5536	40	Not Discovered
EKCL	Textile	37.32	N/A	45	20.58%	3353	29	Not Discovered
ACFL	Textile	47.88	N/A	40	-16.46%	5835	39	Discovered
BPML	Paper & Printing	53.05	N/A	80	50.80%	42810	78	Not Discovered
Category 03: Allowed to Mention Indicative Price								
ACMELAB	Pharmaceuti cals & Chemicals	96.23	71.00	85.2	-11.46%	1798	28.2	Discovered
UPGDCL	Fuel & Power	67.60	60.00	72	6.51%	2125	24	Discovered
MICEMENT	Cement	94.58	93.00	111.6	18.00%	0	0	Discovered
RAKCERAM ICS	Ceramics Sector	41.06	40.00	48	16.90%	73	8	Discovered

In the table above, we can see that all the companies under the category-01 & 03 discovered the fair price through the bidding process. Also, not all companies in category-02 are in a position to find fair price

through the Book Building Method. If we look at the companies (category-01) that do not have indicative price but listed after the new directive regarding the setting of new bidding process with the implementation of bidding recommendation committee and selection of valuation methods to predict the value, it can be said that the 03 out of 03 companies can discover the fair price of the company. And if we look at the companies that provide no indicative price, 04 out of 06 companies were not able to discover the fair price of the company through the bidding process. And if we look at the companies that provide indicative price, all 04 companies' fair price is discovered through the bidding process. So, according to the case analyzed above, it is clear that after formation of bidding recommendation committee and fixation of valuation techniques, bidders are well-informed about the value of the company resulting greater success in determining the fair price of the company. Also, when there is any indicative price for the bidders to start the bid, the bidding process will more likely to discover the fair price of the securities of the company. We have also calculated the price variation of the bid price quoted by the investors. I observed that for the companies included in the category-01 & 03, the price variation is lower compared to the case when there is no indicative price (category-02) for the bidders. The reason is that the bidders get a clue from the issue managers about their expected cut off price of the shares also formation of bidding committee ensures the professional knowledge in calculating the value of the securities of the company. Price range is also lower for both the category-01 & 03 companies. The average bid quantity which is measured by dividing the total volume at the cut off price by the number of bids and the average value which is measured by total value at the cut off price by the number of bids is also concentrated at the cut off price when there is indicative price available (category-03) for the bidders and also for the category-01 companies. So, it can be said that the new directive for setting the bidding process is a way out from the flaws of book building method followed in the past.

VIII. Conclusion

Under the Book Building Method, the shares are offered above the face value. So, it is important, in the bidding process, to determine the cut off price such that the cut off price reflects the fair price of the company. One of the reasons that the price discovery is important is the presence of lock in period. The lock in period ranges from 3 months to 6 months. So, if the investors determine the cut off price far above the fair price of the shares, they have to keep the shares with them until the lock in period ends. Indicative price provided by the issue managers of the company helps the bidders to start the bidding process. Also, introduction of bidding recommendation committee has eliminated the knowledge gap between the bidders. They get a reference point to start the bid.

References

- [1]. Aggarwal, R. and Conroy, P., 2000. Price Discovery in Initial Public Offerings and the Role of the Lead Underwriter. *The Journal of Finance*, 55(6), pp.2903-2922. Biais, B. and Faugeron-Crouzet, A., 2002. IPO Auctions: English, Dutch, ... French, and Internet. *Journal of Financial Intermediation*, 11(1), pp.9-36. Dsebd.org. 2020. Dhaka Stock Exchange. [online] Available at: <<http://www.dsebd.org/>> [Accessed 26 August 2020]. Hanafi, M., 2016. Fixed Price and Book Building Methods Under Exogenous
- [2]. Environment: Evidence from Indonesia Stock Market. SSRN Electronic Journal., Hartana, H., 2019. INITIAL PUBLIC OFFERING (IPO) OF CAPITAL MARKET AND CAPITAL MARKET COMPANIES IN INDONESIA. *Ganesha Law Review*, 1(1), pp.41-54. Mungara, K., 2011. An Analytical Study of Return on Investment on IPO's of Indian Corporates. *Indian Journal of Applied Research*, 4(1), pp.283-285. Sec.gov.bd. 2020. Bangladesh Securities And Exchange Commission. [online] Available at: <<https://sec.gov.bd/>> [Accessed 26 August 2020]. SHAHRIAR, Q., 2010. IDENTITY IN A SECOND-PRICE SEALED BID
- [4]. AUCTION: AN EXPERIMENTAL INVESTIGATION. *The Manchester School*, 79(1), pp.159-170. Singh, I. and Mitchell Van der Zahn, J., 2007. Does intellectual capital disclosure reduce an IPO's cost of capital? *Journal of Intellectual Capital*, 8(3), pp.494-516.