

OPPORTUNITIES OF HEDGING WITH FORWARD CONTRACT: EVIDENCES FROM CHITTAGONG STOCK EXCHANGE (CSE)

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Abstract

The stock market of Bangladesh is still in its development stage. No mechanism is there for the investors by which they can get protection against the variability of price that generates risk. A forward contract, an instrument of derivatives, gives the parties involved in the contract protection against such risk. This study investigates whether there is any opportunity of using forward contract or not for the investors trading at Chittagong Stock Exchange (CSE), one of the major stock exchanges of Bangladesh. To conduct the study, closing prices of 50 randomly selected companies operating under different sectors has been taken from the website of CSE for the period of September 2019. Then, the forward prices for December 2019 have been calculated by compounding the September prices at the rate of 91-day Treasury bill. Actual December 2019 prices are then compared to the calculated forward prices. The study finds significant difference between the actual price and calculated forward price for 94 percent of the sample companies. This implies that, the investors of CSE could better off by hedging their position through forward contract if such mechanism were there in practice.

Keywords: Derivatives, Forward contract, Hedging, Price risk, Risk free rate

1. INTRODUCTION

A vibrant stock market is essential for smooth supply of funds from the savers to the demanders. Investors who needs fund can meet their demand for fund by creating opportunities for other investors through the stock market. The buyer of stocks, in turn, expects to have capital gain or regular income in the form of dividends. But unlike other investments, investment in stock is not risk free. A volatile stock market can frustrate the investors and make them reluctant from using their saving to buy stock. As a result, supply of funds to the companies comes down and it affects the economic performance of a country negatively. Thus, a mechanism to save the stock market investors should be there which will protect them against such volatility and reduce their risk of investment in stock. A forward contract

provides such protection to the stock market investors by which they can buy or sell a pre-fixed number of stocks in a pre-fixed future date at a pre-fixed price.

In Bangladesh, no practice of entering into forward contract is there that gives the traders protection against the risk of price volatility in either of the two stock exchanges, namely Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). This paper shows whether there is any opportunity to get protection against risk arising from stock price volatility for the investors trading in Bangladesh by using forward contract or not. To conduct the study closing prices of 50 randomly selected companies operating under different sectors has been taken from the website of CSE. This exchange of the country started its official trading on October 10, 1995. It transformed its manual transaction process to automated one on June 2, 1998. During the period July-September 2019, against 573.02 million shares a total number of shares traded in the exchange were 464.33 million. During the same quarter, the total turnover value of traded shares and the market capitalization of CSE were BDT (Bangladesh Taka) 15.06 billion and BDT 3019.73 billion respectively (Research Department, Bangladesh Bank, 2019).

1.1 Objective of the Study

The objective of the study is to find the opportunity of hedging through forward contract for the stock market investors of Bangladesh. To do so, the gap between the forward price and the actual price of shares at the date of expiry of contract has been identified. Then, it is tested whether the gap is statistically significant or not.

2. LITERATURE REVIEW

Rao (2012) defines derivatives as contracts whose yields depend on the value of asset underlying in the contract. According to his study, financial derivatives can be used to fulfill the objective of risk management and it is possible to manage risk arising from the use of traditional instruments with derivatives. Malleswari (2013) states that forwards, futures, options and swaps are the most common forms of such contracts. According to Hausin et al. (2008) all these derivatives are also called hedge instruments and are used for reducing the level of risk associated with underlying transactions. Hull (2012) defines the term hedge as a trade which has been designed to reduce risk. As such, hedging involves taking position in the market in order to reduce risk arising from the price volatility of an asset underlying in the contract.

No financial market is there in the globe which is out of risk or chance of financial crisis. Market for derivatives or forward market provides a mechanism to absorb risk to some extent. According to Islam and Chakraborti (2015), emergence of the derivatives market is one of the ingenious achievements of financial engineering which provides an efficient and effective solution to the problem associated with the price volatility of underlying assets. During the time of financial crisis, management of risk becomes more crucial (Kozaric & Fabris, 2012). And according to Barjaktarovic (2010), financial derivatives gain importance as an instrument for managing market risk at that time. Embrechts & Furrer (2006) define market risk as the risk that changes the value of investment through the changes in market related risk factors. Moreover, Djenic et al. (2012) studied the importance of forward

contract and its successful implementation during the time of financial crisis focusing on the key economic and legal issues in the context of Serbia.

Malleswari (2013) studies the role of derivatives in managing risk. According to him, derivatives are used as tools of hedging that helps an entity for exchanging the risk from one group to another. Đorđević (2010) finds that, awareness regarding the benefits of derivatives market in risk management is one of the reasons of growth in derivatives market all over the world. In particular, forward market trading is an integral part of economies that have reached its advanced stage of development and would play a significant role in development of other series of developments in the economy. Countries that are yet to form derivatives market can get the advantages of financial integration through an inception of such practice.

Rahman and Hasan (2011) show why derivatives market is necessary in Bangladesh. According to them, due to the catastrophic fall in the capital market, rapid decline in Foreign Direct Investment (FDI) and scarcity of opportunities for investment, an innovative and versatile financial mechanism like derivative securities is a crying need of the investors for hedging their risk. In their study, Rahman and Das (2015) focus on the importance of derivatives for strengthening the capital market and its structure in Bangladesh. Working on the potentiality of derivatives market, Molla (2018) identifies the rapid development in infrastructure, stable political environment, effective governance and awareness of the investors as the key factors that may necessitate for inception of a strong derivative market in Bangladesh. Moreover, Chowdhury (2021) finds that through the inception of practicing foreign exchange forward not only the individuals and firms but also the country and its economy would be benefited.

3. FORWARD CONTRACT

Forward contract is a class of derivatives whereby a bilateral contract is held between two parties to buy or sell an asset underlying in the contract at a price predetermined by the contract at a particular future date. The underlying asset can be anything; it may be precious metals like silver, gold etc., commodities like rice, potato, chili, wheat etc. or financial assets like stock, bond or currency. Such contract gives the parties involved in the contract a protection against risk arising from the volatility of price. To decide on, whether a forward contract is worthy or not, it is necessary for a trader to determine the value of the forward contract by compounding the spot price continuously at prevailing risk free rate for the maturity of contract as follows (Hull, 2012):

$$F = S_0 e^{rt} \dots\dots\dots (i)$$

In the aforementioned formula, F = forward price of the underlying asset at time t; S₀ = spot price of the asset during the time of contract; r = risk free rate of return; t = maturity of the contract and e = exponential. Forward contract is one of the powerful tools of derivatives which are used not only by the hedgers for managing risk but also by the arbitrageurs for making arbitrage profit. Forward price considers time value of money and gives idea to the trader regarding the price of an asset at which it should be traded at a particular future period of time.

4. METHODOLOGY

The study has been done based primarily on secondary data. The September and December closing prices of 50 randomly selected companies out of total 328 listed companies (which covers more than 15 percent of the population) for the year 2019 have been collected from the website of CSE. For each of the prices of September the 91-day forward price for each of the days of December 2019 has been calculated by applying the equation (i) through Microsoft excel sheet. To do so, rate of interest (7.95 percent) of the 91-day Treasury bill has been used. The rate has been taken from the web site of Bangladesh Bank. Then, a comparison is made between the actual prices and the calculated forward prices of December. Then, to investigate whether the gap between the calculated forward price and actual price is statistically significant or not “p value” has been generated by applying t test for each of the sample companies.

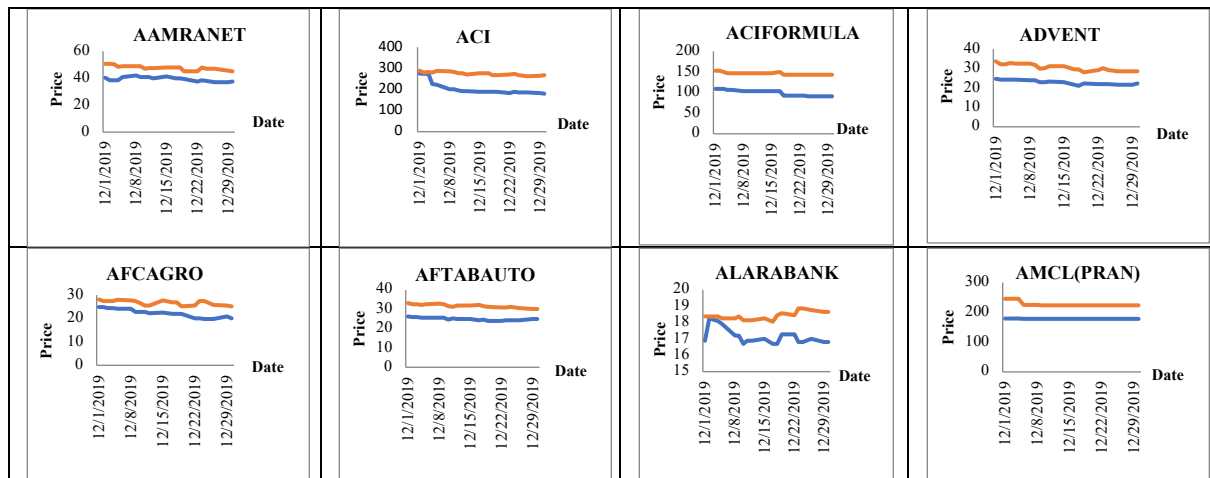
5. HYPOTHESIS

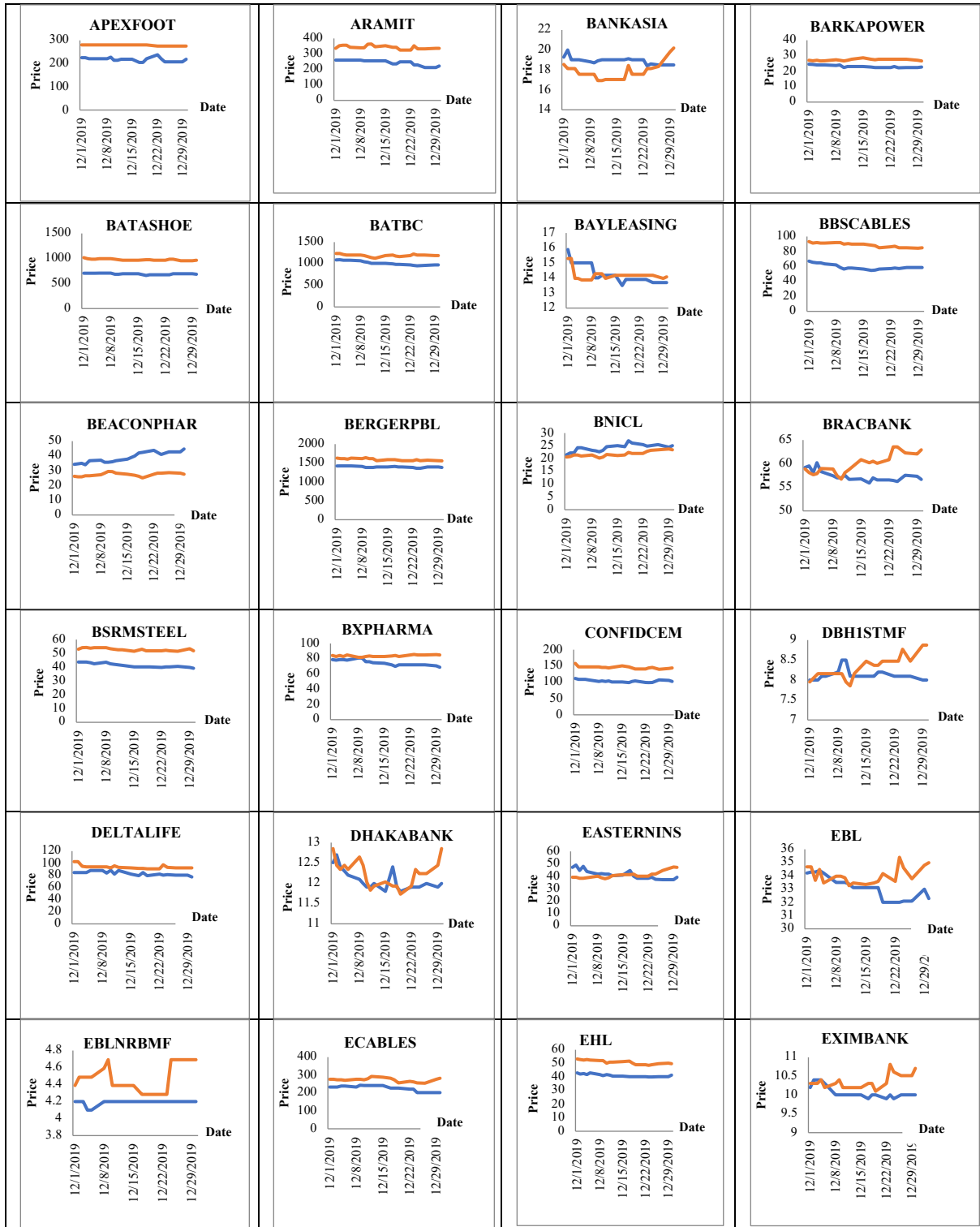
Null Hypothesis, H_0 : There is no significant difference between the actual price at the day of maturity and the forward price

Alternative Hypothesis, H_1 : There is significant difference between the actual price at the day of maturity and the forward price.

6. ANALYSIS AND FINDINGS

The graphical depiction of the differences between the actual price and the forward price at different maturity dates for each of the sample companies has been shown in the following figure (Figure 1):





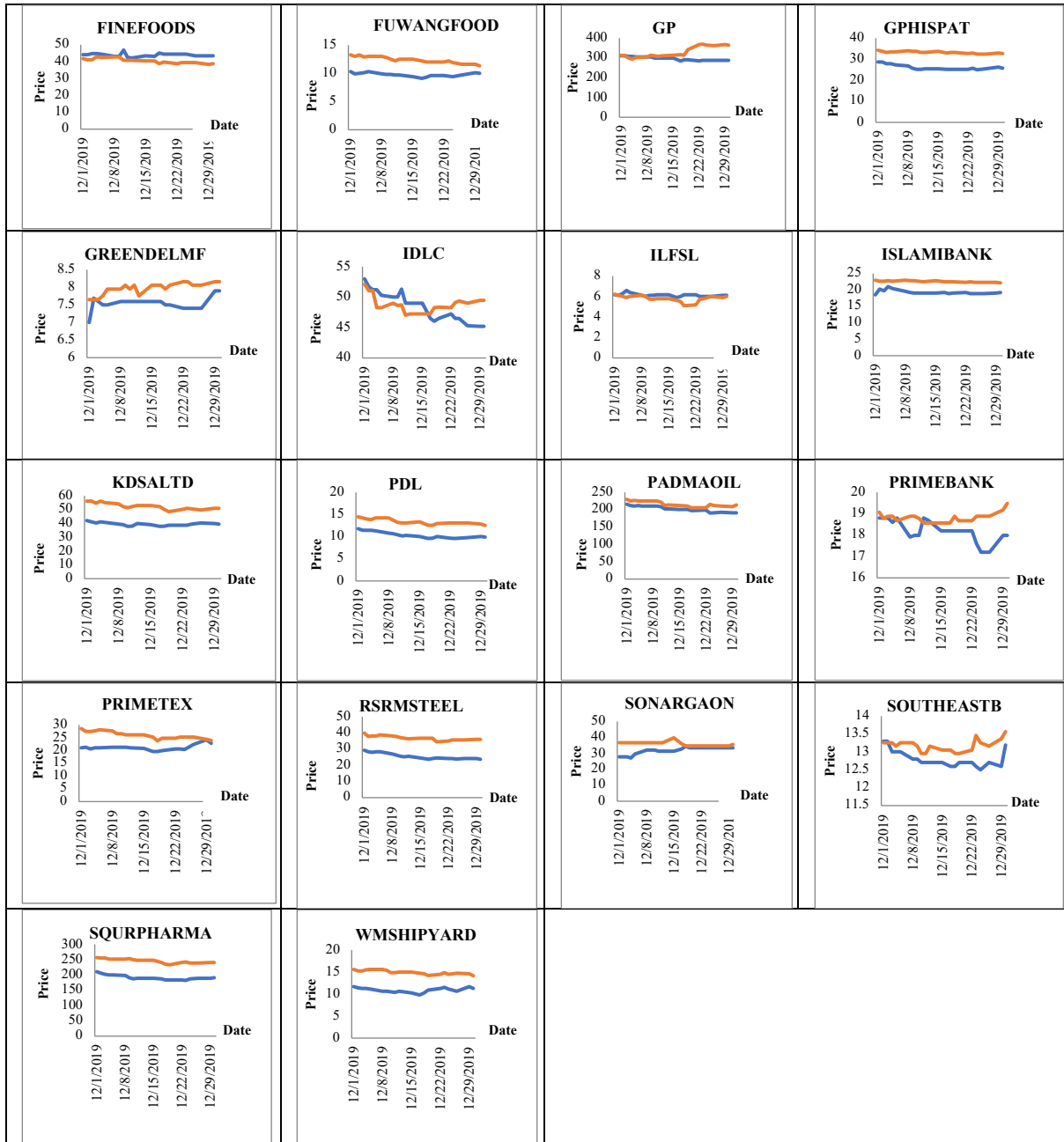


Figure 1: Graphical depiction of the differences between the actual price and the forward price for different maturity dates. — Actual Price — Forward Price

Source: Author’s own depiction

From the above figure it is observed that, for almost all the sample companies the actual price differs from the forward price for each of the maturity dates. Only for the five companies (10 % of samples) i.e. BANKASIA, BEACONPHAR, BNICL, IDLC and ILFSL, forward price is less than the actual price. But, for rest of all 45 the sample companies (90 % of samples) the forward price is higher than the actual price, which implies that the forward contract could be advantageous for the investors to

get protection against risk of volatility. To investigate whether the differences between the actual price and forward price for the maturity dates are significant or not, t test has been conducted at significance level of 0.05 and the result has been shown in the following table (Table 1):

Table 1: t test result for the sample companies

Company	Mean		t Statistic	t Critical	P(T<=t)	Null Hypothesis Accepted/ Rejected	Is the difference significant? (Yes/No)
	Actual Price (BDT)	Forward Price (BDT)					
AAMRANET	39.34	47.80	-22.24	2.09	0.000	Rejected	Yes
ACI	205.73	275.21	-11.46	2.09	0.000	Rejected	Yes
ACIFORMULA	99.87	146.42	-49.00	2.09	0.000	Rejected	Yes
ADVENT	22.92	30.60	-39.75	2.09	0.000	Rejected	Yes
AFCAGRO	22.37	26.75	-13.19	2.09	0.000	Rejected	Yes
AFTABAUTO	25.04	31.78	-46.16	2.09	0.000	Rejected	Yes
AMCL(PRAN)	178.22	227.86	-25.93	2.09	0.000	Rejected	Yes
APEXFOOT	217.92	278.99	-32.28	2.09	0.000	Rejected	Yes
ALARABANK	17.18	18.42	-9.09	2.09	0.000	Rejected	Yes
ARAMIT	245.27	343.67	-27.69	2.09	0.000	Rejected	Yes
BANKASIA	18.92	17.94	4.17	2.09	0.000	Rejected	Yes
BARKAPOWER	23.14	27.30	-15.96	2.09	0.000	Rejected	Yes
BATASHOE	690.46	978.18	-71.26	2.09	0.000	Rejected	Yes
BATBC	1016.99	1191.79	-16.51	2.09	0.000	Rejected	Yes
BAYLEASING	14.28	14.23	0.38	2.09	0.708	Accepted	No
BBCABLES	59.52	88.77	-44.85	2.09	0.000	Rejected	Yes
BEACONPHAR	38.79	27.43	13.69	2.09	0.000	Rejected	Yes
BERGERPBL	1395.7	1592.41	-34.72	2.09	0.000	Rejected	Yes
BNICL	24.21	21.78	9.93	2.09	0.000	Rejected	Yes
BRACBANK	57.41	59.90	-3.90	2.09	0.001	Rejected	Yes
BSRMSTEEL	41.41	52.81	-52.52	2.09	0.000	Rejected	Yes
BXPHERMA	74.89	83.81	-8.74	2.09	0.000	Rejected	Yes
CONFIDCEM	104.05	145.74	-43.99	2.09	0.000	Rejected	Yes
DBH1STMF	8.13	8.32	-2.33	2.09	0.031	Rejected	Yes
DELTA LIFE	83.23	94.10	-11.70	2.09	0.000	Rejected	Yes
DHAKABANK	12.08	12.25	-2.55	2.09	0.020	Rejected	Yes
EASTERNINS	41.58	40.79	0.62	2.09	0.543	Accepted	No
EBL	33.16	34.06	-3.53	2.09	0.002	Rejected	Yes
EBLNRBMF	4.19	4.47	-7.69	2.09	0.000	Rejected	Yes
ECABLES	227.35	273.39	-15.80	2.09	0.000	Rejected	Yes
EHL	41.13	50.92	-45.41	2.09	0.000	Rejected	Yes
EXIMBANK	10.07	10.36	-4.77	2.09	0.000	Rejected	Yes
FINEFOODS	43.94	40.56	8.21	2.09	0.000	Rejected	Yes
FUWANGFOOD	9.76	12.40	-22.77	2.09	0.000	Rejected	Yes
GP	296.73	327.12	-3.86	2.09	0.001	Rejected	Yes
GP HISPAT	26.19	33.31	-29.80	2.09	0.000	Rejected	Yes
GREENDEL MF	7.55	7.97	-8.47	2.09	0.000	Rejected	Yes
IDLC	48.53	48.85	-0.60	2.09	0.558	Accepted	No

ILFSL	6.14	5.82	4.50	2.09	0.000	Rejected	Yes
ISLAMIBANK	19.32	22.57	-24.13	2.09	0.000	Rejected	Yes
KDSALTD	39.55	52.42	-32.78	2.09	0.000	Rejected	Yes
PADMAOIL	202.34	216.63	-13.47	2.09	0.000	Rejected	Yes
PDL	10.39	13.38	-43.09	2.09	0.000	Rejected	Yes
PRIMEBANK	18.21	18.83	-4.56	2.09	0.000	Rejected	Yes
PRIMETEX	21.09	26.04	-11.89	2.09	0.000	Rejected	Yes
RSRMSTEEL	25.65	36.83	-51.10	2.09	0.000	Rejected	Yes
SONARGAON	31.62	36.06	-6.11	2.09	0.000	Rejected	Yes
SOUTHEASTB	12.81	13.18	-7.10	2.09	0.000	Rejected	Yes
SQURPHARMA	191.85	246.05	-53.09	2.09	0.000	Rejected	Yes
WMSHIPYARD	10.92	14.95	-27.43	2.09	0.000	Rejected	Yes

Source: Author's own calculation

From the above table it is observed that, for 47 companies (94 % of sample) the test statistic is extreme enough (t statistic compared to the t critical value of 2.09 for each of the sample companies) to reject the null hypothesis. On the contrary, only for the three companies (6 % of the samples) i.e. BAYLEASING, EASTERNINS and IDLC, the null hypothesis is accepted. It can also be observed that the p value, $P(T \leq t)$ two-tail, is less than the standard significance level of 0.05 for all those same 47 companies for which the null hypothesis was rejected. This implies that, for those 47 companies (94 percent of the sample companies) the difference between the actual price and the forward price is a statistically significance.

7. DISCUSSION AND CONCLUSION

To facilitate secondary trade of stocks there are two stock exchanges in Bangladesh and CSE is one of these two exchanges. Islam et al. (2014) makes a comparison between the DSE and CSE in terms of their volatility and finds CSE as more volatile compared to DSE. To get protection against such volatility or price risk, forward contract can be used as an effective tool. Such contract provides a mechanism to the hedgers or the parties involved in the contract to buy or sell an underlying asset at a prefixed price at a specified future date. This is how both parties can lock the price in advance at which trade will be held in the future and gets protection against risk arising from change in price of the asset underlying in the contract at the day of delivery. Before entering into the contract it is necessary for the hedger to determine the forward price of the underlying asset at the maturity of the contract. This ultimately gives the hedger an idea regarding the price at which the underlying asset should be traded in the future. But unfortunately, there is no such practice in Bangladesh by which investors could get protection against the price volatility in the stock market. This paper shows that the investors of CSE could better off by hedging their position through forward contract if such mechanism were there in practice.

To conduct the study, closing prices of 50 randomly selected companies operating under different sectors has been taken from the website of CSE for the period of September 2019. Then, the forward prices for the stocks have been calculated by compounding the September prices at rate of 91-day Treasury bill. Then, a comparison has been made between the actual December 2019 prices and the calculated forward prices. The result shows that, only for five sample companies (10 % of total sample)

the calculated forward price is less than the actual price and for rest of the 45 sample companies (90 % of total sample) calculated forward price is higher than the actual price.

Again, through determination of p value the study finds significant difference between the forward price and the actual spot price at the maturity of the forward for 94 percent of the sample companies. This implies that, if forward contract were on practice investors in the market could be more aware regarding their holdings in advance. Such collective awareness of the investors could make the market more predictable, perfect and stable. Based on the result of the study, it is highly recommended to the policy makers of Bangladesh to take initiative for inception of derivatives market in the country. It will not only expand the financial market of Bangladesh but also provide the traders a new scope for investment. This, in turn, will make the market more liquid and stable for the participants.

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